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AUSTRALIAN TIMBERS.

BY

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PREFACE.

THE following work on Australian Timbers has been written to accompany the timber exhibits in the New South Wales Courts at the Chicago Exhibition.

The Author has endeavoured to give a brief outline of the characteristic properties of the various timbers and their uses.

The experiments on the strength and elasticity of the various timbers have all been made in the Engineering Laboratory of the University of Sydney by the Author, assisted by the Senior Undergraduates in Engineering. The Author has acknowledged, as far as possible, the sources from which information has been derived; but he wishes to express, more especially, his obligations to Mr. J. H. Maiden, F.L.S., F.C.S., Curator of the Technological Museum, Consulting Botanist to the Forestry Department, for his revision of the botanical names of the various specimens tested; also to Mr. Ledger, Undergraduate in Engineering, for his assistance in working out the tabulated results and revising the proofs. The work of testing and recording the results has extended over seven years, and has been done in the Author's spare time. He offers it to the Government, through the Royal Commission for the Chicago Exhibition, as some return for money voted by the New South Wales Parliament for the Engineering Department of the University of Sydney.

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AUSTRALIAN TIMBERS.

It is proposed in the following pages to give some account of the most important of the Australian timbers, to describe their physical properties for application in engineering and building construction.

Over the greater part of the vast area comprised in the continent of Australia forests are more or less distributed, which consist of trees yielding, to a greater or less extent, strong and durable timber. The trees are numerous, both as regards species and individuals, but our knowledge of their true botanical names is, as yet, not as complete as could be desired. This is to be regretted, because, however valuable the timber derived from a particular tree may be shown by experiment to be, the information is of little value unless the particular tree referred to can be identified. The identification of Australian timbers is by no means an easy task, especially in the case of the eucalypti, which comprise by far the most numerous and valuable of the timber trees of Australia. Some idea of the difficulty referred to may be gathered from the remarks of Sir William Macarthur, which, although made so far back as 1854, are perfectly true to-day. He says "The most experienced among the sawyers have no names for a great number, and can give little information to be relied upon with regard to the qualities of the timber. They have been in the habit of confounding together numerous species under the general designation of brush trees. It requires careful and laborious investigation on the part of a stranger in these brushes to distinguish trees, even of very different families. The foliage is often so far overhead, and so intermingled with that of the neighbouring trees and climbers, their trunks are so covered with epiphytes and the light is so imperfect that the tree often requires to be cut down before it can be identified."

The term hardwood is generally applied to those kinds of trees which occupy the more open and, generally, the more grassed country, and consists for the most part of species of eucalyptus as well as of some other myrtaceous trees such as, *Angophora*, *Melaleuca*, *Callistemon*, *Tristania*, and *Syncarpia*, and some others. These are distinguished by certain names, such as:—Red, grey, white and black ironbarks; spotted, grey, blue, red, white and flooded gum; blackbutt, woollybutt, tallow-wood, &c. It is possible to obtain timbers under any one of the above names in the Sydney and other colonial markets, yet this cannot always be relied upon, as it frequently happens that a great variety of timber is sold under one name, which leads to an inferior timber being often substituted for a superior.

The first attempts to collect and classify Australian timbers in a systematic manner was made in 1854, when specimens were obtained for the Paris Exhibition of the following year. Sir William Macarthur and Mr. Charles Moore, F.L.S., Director of the Botanic Gardens, Sydney, were jointly responsible for the work, the former collecting in what was then termed the Southern districts, comprising the counties of Cumberland and Camden, New South Wales, and the latter in the Northern districts, comprising what is now the southern portions of Queensland. These gentlemen again

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co-operated in order to make the much more comprehensive and complete collection of timbers for the London Exhibition of 1862, which included a great variety of specimens from the Clarence River district of New South Wales. A selection of these woods is now exhibited in the timber museum of the Royal Gardens, Kew. At the various international exhibitions since the above dates Australian timbers have been exhibited.

Referring to hardwoods, but more particularly to the eucalyptus genus, it is well known that the trees are at full maturity rarely sound at the heart, and at best the heartwood is brittle and of no value; that, moreover, in several kinds, a very serious defect prevails called "gum-vein," which is caused by the extravasation of gum-resin in particular parts among the woody tissue, and where an apparent injury has been sustained, or, in the concentric circles between successive layers of wood. It often, however, is not a pathological indication. The latter defect, when occurring to any great extent, renders the timber comparatively useless, except for fuel, the interposing gum-veins having the tendency to cause a separation of the woody layers if the timber be exposed to the weather.

The average height to which eucalypts attain in the colony of New South Wales is about 100 feet, with a stem of from 2 to 4 feet in diameter. All above this height are exceptional. In jungle forests they have been known to reach a height of 200 feet; in the open forests, in the Wingecarribee district, 150 feet is not an uncommon height for more than one species to attain. But these heights sink into insignificance when compared with those of some allied species indigenous to Victoria, Tasmania, and Western Australia. The Tasmanian "blue-gum" (*Eucalyptus globulus*) reaches a height of 300 feet, and Baron von Mueller states in the official record of the Melbourne International Exhibition, that a karri-tree (*Eucalyptus diversicolor*, F. v. M.) of Western Australia, was measured and found to be over 300 feet in height; and that a fallen tree of *Eucalyptus amygdalina*, in the deep recesses of Dandenong, Victoria, gave a length of over 300 feet, with a stem of proportionate diameter. The same authority gives further measurements of other trees as follows:—A species of eucalyptus on the Black Spur, 10 miles from Healesville, over 300 feet high, and a tree of the *Eucalyptus amygdalina*, growing in the Berwick Ranges, 81 feet in circumference. The author can testify to the accuracy of some of these statements to a considerable extent, particularly in the Black Spur Range, Victoria, where he has seen trees not far from the main road which approximate very closely to the dimensions referred to. The species of *Angophora*, or "apple-trees" of the colonists, are closely allied to the eucalypts, and form large trees where the soil is suitable for their growth, characterizing certain districts by their abundance.

Cunningham, Robert Brown, Capt. P. P. King, Sir Thomas Mitchell, and Mr. Charles Moore long since drew attention to the fact that little or no attention was given in Australia to the proper season for felling timber—a point which is generally admitted to be one of extreme importance. Notwithstanding, the very best of the Australian timbers are cut throughout the whole year to meet the demands of the market for railways and other public and private purposes.

Any person competent to form an opinion on this subject must admit that the durable quality of the timber is sacrificed if the tree be cut down when in full vigour of growth. At this time the sap vessels are full of activity and filled with watery juices, destined for the support and increase of the whole body. Timber cut when in this condition will have its sap vessels charged with crude fluid matter; fermentation ensues, the tissues are

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destroyed, and the entire woody substance reduced to a state certain to be acted on by atmospheric and other external agents. If, on the contrary, a tree be felled after having fulfilled its natural functions of leafing, flowering, and maturing its fruit, the wood will not be subject, under ordinary conditions, to sudden decay. In this case the roots will have ceased to absorb nutriment from the ground; that previously taken up by them has been elaborated by the action of the leaves, and deposited in the formation of new wood; during this process, the sap vessels have been relieved of all crude substances, every essential to perfect growth has been secured; and the wood rendered in the best possible condition for use. For these reasons it would appear that the best time to cut down trees in order to secure the most enduring timber is either immediately after the fall of the leaf of those that are deciduous or shortly after the seed has ripened into maturity in those that are of an evergreen character.

It must be apparent that this is a subject deserving the best consideration of those interested in the use of timber; but in the colony of New South Wales, where everything of this kind is too frequently done to meet the urgency of the moment, it is rarely possible to give it that practical attention which it deserves.

The Wagga Wagga timber viaduct (which was thoroughly inspected and tested by the Royal Commission for Railway Bridges) is constructed over the low ground liable to flood near the Murrumbidgee River, and consists of 316 spans, each 29 feet 6 inches. In order to supply such a large quantity of timber within the contract time, it was necessary to cut down a considerable number of trees when the sap was up, instead of during the winter months. In consequence dry rot appeared soon after its erection, being most conspicuous in the piles. This decay, together with the cavity or pipe which occurred in many of the piles, has since necessitated considerable renewals. The tarring of the piles before they had time to season probably increased the tendency to decay.

Timber is used very extensively in Australia for a variety of purposes, such as for road and railway bridges, culverts, sleepers, paving of streets, fencing, &c., as well as in ordinary building construction.

The average life of timber bridges, according to the experience of the Public Works Department, New South Wales, is about twenty-five years, excepting the timber deck, which, in consequence of the wear caused by the traffic lasts only about twelve and a-half years. In consideration of the fact that generally the timber used in these works is felled when it is required, without any regard to the proper time for felling, and that there is no attempt at seasoning—moreover, that the timber grown in the locality, if of fair quality, was used in preference to better timber grown in other localities—this life of twenty-five years is very satisfactory. The practice now is to send up timber from Sydney unless good timber can be procured near the site of the bridge.

Many timber structures last longer than twenty-five years, but in some districts the timber is of inferior quality, or the white ant is very energetic, or the climate is unfavourable, so that the life of a timber bridge may be as low as fifteen years.

The author considers that with many of the best of the New South Wales timbers, felled at the proper time and naturally seasoned before being used, the life of timber structures would average fully thirty years. This opinion is strengthened by the soundness of various specimens of timber which are continually brought under the author's notice, taken from old bridges or piles in damp ground, which have been in use for periods varying from forty to sixty years, and even longer, and which show no signs of decay whatever.

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The strength and durability of timber depends to a great extent upon the locality in which the trees are grown. Timber, for example, of the same name and presenting the same general characteristics, but grown under different conditions with regard to temperature, geological formation of soil, the amount and distribution of rainfall, whether grown on mountain ridges or in swampy low-lying ground, differs widely in quality. Granite country does not appear to produce good timber in any part of Australia.

The Victorian Carriage Timber Board state in their report that "mountain ash grown on the heights of Narbethong and blue gum from Corner Inlet showed excellent results under the test as compared with timber of the same description grown in other localities under other and less favourable conditions.

The quality, and therefore the value, of timber is so much affected by local conditions that it is all-important in treating of any particular description that they be taken into account.

Hardwood timber grown in swampy low-lying ground is generally deficient in tenacity of fibre compared with the same timber grown at higher elevations and where the geological formation is favourable. Hence blackwood grown on low-lying land is spongy, soon decays, and in power of resistance is inferior to red deal; grown on mountain ridges or elevated land displaying rock of the mesozoic period, it attains its maximum strength, quality, and value."

The chief objections to the use of timber in constructive works in Australia are its liability to decay from dry-rot, to the attacks of the white ant, and in marine works to the attacks of the teredo.

It has been thought desirable to consider the properties of the various Australian timbers more in detail, and the author has consulted the works of Baron von Mueller, Government Botanist of Victoria, and the work by Mr. Maiden, Consulting Botanist to the Department of Forests, Sydney, on "Useful Native Plants of Australia;" he has also received considerable help from Mr. Maiden and Mr. Henry Deane, M. Inst. C.E.

Eucalyptus siderophloia, Benth.

Large-leaved Ironbark-tree of New South Wales and Queensland.

One of the principal ironbark trees; the wood varies in colour from pale to dark; it is known also as the red ironbark.

Eucalyptus sideroxylon, A. Cunn.

The Red Flowering Ironbark-tree of New South Wales.

It has red-coloured wood, which is used for various purposes. This must not be confounded with *E. leucoxylon*, which is a totally different species.

Eucalyptus paniculata, Sm.

Red, White, or She Ironbark-tree.

The wood is of good repute, and is used for many purposes.

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Eucalyptus crebra, F. v. M.

Narrow-leaved Ironbark of New South Wales and Queensland; also known as Grey and White Ironbark.

The ironbarks above-mentioned yield very valuable timbers. The modulus of rupture is half that of good cast iron; the tensile strength is half that of good wrought iron; and for strength, elasticity, and durability combined they are unrivalled. The timber is hard, with interlocked fibre, rather difficult to work, and in the experiments made by the author weighed from 69 lb. to 76 lb. per cubic foot. Baron von Mueller gives the weight, when quite dry, from 63½ lb. to 68½ lb. per cubic foot. The price of beams of this timber in Sydney and Melbourne is about 2s. 6d. per cubic foot. Ironbark is largely used for bridges, railway sleepers, in tunnelling, mining, &c. The Railway Commissioners of Victoria recently reported that sleepers laid twenty-four years ago still remain sound.

Eucalyptus microcorys, F. v. M.

Tallow-wood.

It flourishes near the coast of New South Wales and South Queensland; in the latter locality it is usually called turpentine. The wood is of a greasy nature, most marked when freshly cut, hence the common name. Possessed of great strength, elasticity, and durability, it may be safely used above or below ground. For the decks of ships and for bridges it is the best of Australian timbers, and it is also valuable for piles, and largely used for railway sleepers; it is readily worked by saw or plane, and in the author's experiments weighed from 65 lb. to 77 lb. per cubic foot.

Geijera salicifolia, Schott.

Balsam of Copaiba tree.

It grows in New South Wales and Queensland, and affords a close, tough, and firm timber, of light brown colour, and nicely marked.

Eucalyptus pilularis, Sm.

The Blackbutt-tree of New South Wales, South Queensland, and Gippsland.

It has been known to attain a height of 300 feet, with a stem girth of 45 feet. The timber sometimes contains gum-veins, and requires careful seasoning; it may be had in great quantities of large scantling both in Sydney and Melbourne. It is used for piles, decks of ships and bridges, railway sleepers, carriage work, &c. According to Baron von Mueller, a cubic foot weighs, when absolutely dry, from 50 lb. to 56 lb.; in the author's experiments the weight per cubic foot varied from 58 lb. to 67 lb.

Eucalyptus maculata, Hook.

The Spotted Gum of New South Wales and Queensland.

The tree grows best on stony ridges, and derives its name from the spotted appearance of the trunk. The timber is somewhat coarse, with

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wavy grain, and possesses considerable strength and elasticity, both in tension, compression, shear and cross-breaking. When thoroughly seasoned it weighs about 54 lb. per cubic foot; but in the author's experiments the weight per cubic foot varied from 54 lb. to 63 lb. It is a valuable timber, and appears to the author not to be so thoroughly appreciated as it deserves. Some Queensland specimens of this timber gave results in testing equal to those obtained with the New South Wales ironbark. The sap-wood, however, is inferior in quality, and should always be removed; the heart-wood is generally sound, and not liable to pipe.

Eucalyptus rostrata, Schlecht.

Red Gum of South Australia, Victoria, and the Murray District of New South Wales, and many river flats of the interior; it is known also as Flooded Gum in some districts.

It attains, exceptionally, a height of 200 feet, and a tree measured on Mount Lofty, South Australia, had a stem girth of 25 feet. The timber is valuable when straight grown, and is distributed throughout the Australian colonies; it is very plentiful in New South Wales on the Murray and Edwards rivers. It varies, however, in quality, as the timber of some districts is 50 per cent. better than that of others. It does not generally possess more than half the strength and elasticity of good ironbark when tested in tension, compression, or cross-breaking, although it nearly equals it in its resistance to shearing along the grain, showing its suitability for keys and wedges in compound timber structures. This wood is largely used in Melbourne for street-paving, and in other parts of Victoria for road and railway bridges; it is very valuable for sleepers when the gum veins can be avoided The Railway Commissioners of Victoria reported sleepers to be quite sound after twenty-four years use. It is highly valuable for its durability, and makes excellent wharf piles, and is also used in ship-building, for decks of bridges, &c. Baron von Mueller states that a cubic foot of this timber, absolutely dry, varies in weight from 53½ lb. to 57½ lb. The author's experiments gave 55 lb. to 70 lb. per cubic foot. The red gum of Western Australia is *Eucalyptus calophylla,* R. Br.

Eucalyptus saligna, Sm.

Blue Gum, Flooded, Grey, and White Gum.

This is the Sydney blue gum, in contradistinction to the Melbourne blue gum. It is a heavy, close-grained timber, resembling *E. rostrata* in appearance, only paler, but possessing greater strength and elasticity. It is largely used in engineering, for ordinary building construction, railway sleepers, ship-building, &c., and does not readily burn. Specimens tested by the author varied in weight from 55 lb. to 78 lb. per cubic foot.

Eucalyptus tereticornis, Sm.

Known as Red, Grey, Blue, and Slaty Gum.

A very valuable timber, much used in the coastal districts, where the tree grows to a considerable size. It resembles somewhat *E. rostrata,* to which it is closely allied.

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Eucalyptus globulus, Lab.

Blue Gum.

This tree grows extensively in Tasmania, and to a less extent in Victoria. The salubrity of the country in which it flourishes is attributed by Baron von Mueller to—

1. The ready and copious absorption of moisture from the soil, and the corresponding power of exhalation.
2. The evolution of a peculiar antiseptic volatile oil.
3. The disinfecting action of the fallen leaves on decaying organic matter in the soil.

Tenison-Woods and Mr. Maiden, however, consider that there is nothing more in these three points than in many European trees. The timber is strong, durable, and weighs about 60 lb. per cubic foot; it has been largely used for railway sleepers, and the Victorian Railway Carriage Board recommended it as a suitable timber for railway carriages. The blue gum of South Australia is *E. fasciculosa*, for many years supposed to be botanically identical with *E. paniculata*, one of the ironbarks.

Eucalyptus bicolor, A. Cunn.

Slaty Gum, so named from the grey and white patches on the bark.

It is not quite equal in strength and elasticity to ironbark, but it is much more easily worked. It is a very durable timber, and has been used for bridges, railway sleepers, building construction, fencing, &c. Specimens tested by the author weighed 78 lb. per cubic foot.

Eucalyptus viminalis, Lab.

Ribbony, Manna, White Gum, &c.

In rich soil of the mountain forests this tree attains to a great size, but on poor soil it only reaches a moderate size. The bark is dark and rough. The timber is light coloured and clear, and although less strong and durable than many other eucalypti is employed for shingles, rails, and ordinary building purposes. It is subject to attacks of insects and to dry rot. The weight per cubic foot, absolutely dry, according to Baron von Mueller, is about 43 lb.; in the author's specimens the weight per cubic foot was 58 lb. Mr. Maiden considers that at least three species are at present reckoned under *E. viminalis*.

Eucalyptus corynocalyx, F. v. M.

Sugar Gum.

One of the most valuable trees for the dry and arid regions of South Australia. The timber is dense, hard, and in the author's experiments weighed 69 lb. per cubic foot. It is used for railway sleepers, piles, &c.

Eucalyptus hemiphloia, F. v. M.

Grey, or White Box.

Considered an excellent timber in South Australia, Victoria, and New South Wales. It possesses considerable strength and elasticity, and is used for sleepers, telegraph poles, shafts, and wheel-spokes. The author's specimens weighed from 58 lb. to 67 lb. per cubic foot.

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Eucalyptus longifolia, Link and Otto.

Woollybutt.

The tree grows in the extra-tropical eastern portion of Australia. The timber usually contains gum-veins and, although it possesses considerable strength and elasticity, is not durable; it is not much used in engineering construction, but is occasionally used in house-building. The weight per cubic foot, absolutely dry, is about 64 lb.

Eucalyptus resinifera, Sm.

Mahogany, Forest Mahogany, &c.

A valuable timber, possessing strength, elasticity, and great durability. It is useful for piles, as it is not readily attacked by the teredo and lasts well underground; it is also used in building construction, and rafters of this timber were perfectly sound after fifty years in St. John's Church, Parramatta. The author's specimens weighed from 60 lb. to 72 lb. per cubic foot.

Eucalyptus robusta, Sm.

Swamp Mahogany.

So called as the tree generally grows in swampy ground. The timber is valued for ship-building, ordinary building construction, and railway sleepers. The author's specimens weighed from 52 to 75 lb. per cubic foot. The name swamp mahogany is also occasionally applied to *Tristania laurina*, R. Br.

Eucalyptus amygdalina, var. Lab.

Mountain Ash of the Dandenong Ranges of Victoria, also of Tasmania and New South Wales, known also as Peppermint, Red Gum, Stringy-bark, Messmate, &c.

This tree has been known to attain the exceptional height of nearly 350 feet. The timber is fissile and well adapted for shingles and fencing. As regards transverse strength and elasticity, the author's experiments gave fairly good results, and the specimens varied in weight from 44 to 57 lb. per cubic foot. Baron von Mueller states it is not a strong timber.

Eucalyptus virgata, Sieb (*E. sieberiana*, F. v. M.).

Ironbark in Tasmania, Mountain Ash in New South Wales.

The timber is in many respects excellent, but it does not stand well between wind and water. It is largely used for timbering shafts and headings of mines. The author's experiments gave good results, and the specimens weighed from 41 to 67 lb. per cubic foot.

Eucalyptus piperita, Sm.

Stringybark, Peppermint, Messmate, &c.

The timber is durable in damp soil. It is used for posts, shingles, house-building, and rough joiner's work.

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Eucalyptus obliqua, L'Her.

A Stringybark of Victoria and Tasmania, and Messmate of Victoria.

A durable timber, used for scaffolding boards, shingles, and fencing rails. It weighs about 58 pounds per cubic foot, and possesses fully three-quarters the transverse strength and elasticity of good ironbark, but is not good for underground work.

Eucalyptus polyanthema, Schau.

Lignum Vitae, Grey or Bastard Box.

This timber is very durable, though liable to decay at heart and become hollow; it is nearly as strong and stiff as ironbark, is used for bridges, and is useful where a strong and durable timber is required. The weight per cubic foot is about 74 pounds.

Eucalyptus corymbosa, Sm.

Bloodwood.

This timber is so named as it exudes freely a blood-like liquid. It grows better on mountains than on the coast. The wood generally contains gum veins, and is frequently unsuited for girders, although it is very strong and elastic; it is very durable, resists the white ant and damp, and does not readily burn. It is used for piles and railway sleepers.

Eucalyptus diversicolor, F. v. M.

Karri.

This tree grows in Western Australia, where it attains gigantic proportions. There seems to be considerable diversity of opinion regarding the respective merits of this timber and jarrah. Baron von Mueller, in his "Report on the Forest Resources of Western Australia," London, Reeve & Co., p. 6, says of karri that "the wood is regarded as elastic and durable, but it is not so easily wrought as that of *E. marginata;* it has proved valuable for shafts, spokes, felloes, and rails, and is particularly sought for large planks." This timber was also reported favourably upon by Mr. Allen Ransome in 1886, but in the tests it did not finish well in the planing and moulding machines.

Eucalyptus marginata, Sm.

Jarrah.

This is the most valuable of Western Australian timbers, and one of the best of the Australian colonies. It is perhaps more widely known outside Australia than any other timber grown there. It is exceedingly durable, whether exposed so as to be alternately wet and dry, or used as piles in sea water or in damp ground; it appears also to resist the action of the teredo and the white ant. Mr. Allen Ransome reported upon this timber in 1886, to the effect that "planed and moulded specimens, unlike the karri, which does not finish well, left the machines with a remarkably fine surface." It is not more than two-thirds as strong or as stiff as ironbark when tested in cross-breaking and compression. It is four-fifths as strong in tension and shearing. The weight per cubic foot varies from 56 to 68 pounds. Blocks of this wood have recently been used in the Strand and other parts of London for road paving.

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Acacia melanoxylon, R. Br.

Blackwood.

This timber grows in the south of New South Wales, but is better known as a Victorian and Tasmanian timber. It diminishes considerably in weight during seasoning, but shrinks very little in volume. The weight per cubic foot when green may be as much as 71 pounds, but seasoned it varies from 37 to 47 pounds. This timber is recommended as most suitable for the construction of railway carriages, and may also be used advantageously for a variety of purposes, as the inside fittings of buildings, furniture, and for engineering and architectural construction. The wood gave good results when tested in tension, compression, cross-breaking, and shearing along the grain.

Casuarina torulosa, Ait.

Forest Oak.

This timber possesses considerable strength and elasticity, and is chiefly used for cabinet-making. It has a handsome appearance when polished.

Syncarpia laurifolia, Ten.

Turpentine Tree (so called from the oleo-resin produced by the tree).

The timber is durable, and is most useful when used for piles in sea-water, being rarely attacked by the teredo, and it has been used extensively in this way for wharves; it is also used for fencing. The specimens tested by the author weighed from 62 to 69 pounds per cubic foot. It is a difficult wood to burn.

Tristania conferta, R. Br.

Brush, or White Box.

The timber is strong and durable, and is used for ship-building and for wooden tram rails for saw-mills, &c. It weighs from 58 to 67 pounds per cubic foot. It is rarely, if ever, attacked by white ants.

Araucaria Cunninghamii, Ait.

Moreton Bay, or Colonial, Pine.

This tree grows better in the mountains than on low lands. The timber takes a fine polish and is fairly durable if kept dry, or constantly wet, but soon decays if exposed so as to be alternately wet and dry. It cannot be regarded as a satisfactory timber, since it swells during wet weather. It is much used for joiners' work and for flooring, and weighs from 33 to 54 pounds per cubic foot.

Dysoxylon fraseranum, Benth.

Rosewood.

This timber is much valued for indoor furniture, cabinet work, turning, wood-engraving, and ship-building. It works very well, and weighs about 47 pounds per cubic foot when seasoned, but when green it may weigh as much as 74 pounds.

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Ceratopetalum apetalum, D. Don.

Coachwood, or Leather Jacket.

Timber used for boat and coach-building; it weighs about 42 pounds per cubic foot when thoroughly seasoned.

Castanospermum australe, A. Cunn.

Bean Tree.

The timber is soft, fine-grained, takes a fine polish, and is somewhat like walnut in appearance. It is neither very strong nor durable, and is chiefly used for cabinet-making.

Gmelina Leichhardtii, F. v. M.

Beech, or White Beech, of New South Wales (found also in Queensland).

The tree attains a great size, and affords a strong and close-grained timber, which is not readily attacked by white ants and resists the action of the weather. It is a very good wood, shrinks very little, and is largely used for flooring, decks of vessels, and verandahs. The weight per cubic foot is about 49 pounds.

Fagus Cunninghamii, F. v. M.

Tasmanian Beech.

(The N. S. Wales Negro-head Beech is *Fagus Moorei.*)

This wood is prized for sash and door work, and for all light joinery. It is used for the teeth of cog-wheels and also for furniture, and looks well when polished. The burrs are well known under the name of Tasmanian Myrtle.

Cedrela toona, Roxb. (=*Cedrela Australis,* F. v. M.)

Red Cedar of New South Wales and Queensland.

This tree flourishes near the coast, and is largely used for the interior fittings of buildings and for furniture; it is an exceedingly valuable timber, and is used for a variety of purposes where lightness and durability are required. It is easily worked, and weighs from 28 to 41 pounds per cubic foot. This species is also the Moulmein Cedar of India.

The distribution of the various timbers in New South Wales is indicated in the map which has been compiled from returns supplied by the various field officers in the Roads and Bridges Department, Sydney, and also from returns supplied by Mr. Ednie-Brown, Director-General of Forests of New South Wales.

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Strength and Elasticity of Australian Timbers.

THE following is the published information on the strength and elasticity of Australian timbers, as far as the author is aware, up to date:—

The earliest records of experiments on the strength and elasticity of Australian timbers occur in a paper by Mr. James Mitchell, published in the proceedings of the Royal Society, Van Dieman's Land, in 1851.

The apparatus used consisted of two trestles, 7 feet apart, with a scale pan suspended from the centre, in which the weights producing deflection were placed. A silk thread, stretched under the beam, was used as a datum for recording the deflections. Pieces were also prepared in a lathe for testing in tension.

In 1851, Captain Fowke, R.E., made experiments on the subject, some of the results of which are published in Mr. J. M. Balfour's report.

In 1860 Captain Ward (the late General Sir Edwin Ward, R.E.) made a series of experiments on the transverse strength and elasticity of colonial timber. The apparatus used was similar to Mr. Mitchell's already referred to, but the specimens were 2 x 2 inches, tested on supports 4 ft. apart. The results were published by the society, which is now the Royal Society of New South Wales.

In 1865 Mr. J. M. Balfour published a paper on New Zealand and other colonial timbers.

In 1875 Mr. Thomas Laslett published results on this subject in "Timber and Timber Trees, Native and Foreign." Mr. Laslett used specimens 84 inches long x 2 x 2 inches, and they were tested between supports 6 feet apart. Portions of the fractured specimens were also tested in direct tension.

In 1879 Mr. F. Byerley published experiments in the *Australian and Engineering Building News*, and in the same year Mr. F. Campbell, C.E., read a paper before the Royal Society of Victoria.

In 1880 the Railway Department of Victoria experimented upon the transverse strength and elasticity of seven kinds of Australian timbers, using specimens 3 x 3 inches on a span of 8 feet 6½ inches; and in the same year Baron Von Mueller and Mr. G. Luckmann made experiments on various eucalypts, using specimens 2 x 2 inches on a span of 2 feet.

In 1884 the report of a board, which was appointed in Victoria to experiment on Australian timbers and recommend such as were suitable for the manufacture of railway carriages and waggons, was published.

In 1885 Mr. R. Watson, M. Inst. C.E., Engineer-in-Chief for Railway Construction, made experiments on Victorian red gum timber, using specimens 11 inches deep x 7½ inches wide on a span of 14 feet 8 inches. For the Railway Department Baron Von Mueller and Mr. Watson used timber trestles for supporting the experimental beams, and a scale pan suspended from the centre in which weights were placed.

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In 1886 was published the report of the Royal Commission appointed to inquire into the strength and stability of certain railway bridges in New South Wales, and the timber approaches to the Wagga Wagga viaduct. This report contains a record of experiments made to determine the strength and stiffness of the timber viaducts of New South Wales, and the result of testing an ironbark beam 12¼ inches square on trestles spaced 28 feet 6 inches apart. In the same year the author read a paper before the Royal Society of New South Wales on further experiments on the tensile, compressive, and shearing strength of the sound portions of the timber beam above referred to, which were made by means of the testing machine in the engineering laboratory of the University of Sydney.

In 1887 a commission was appointed in Queensland to inquire and report on the most suitable timbers for the construction of railway bridges. The commission experimented on the transverse strength and elasticity of 18 kinds of Queensland timbers, using specimens 2 x 2 inches on a span of 4 feet; and in the same year, at the request of the New South Wales Commission for the Adelaide Jubilee Exhibition, the author made a series of experiments on the transverse and compressive strengths and elasticities, the tensile strengths, and the shearing resistances along the grain of 28 kinds of New South Wales timbers of commercial value, including 360 specimens. The tested timbers were exhibited at the Adelaide Exhibition referred to, and subsequently at the Melbourne Centennial Exhibition. The experiments recorded in Tables Nos. 3 to 9 include the 360 specimens referred to, and were made on the following number of specimens :—

Transverse strength	289
Compressive strength of various proportions	761
Tensile strength	207
Shearing strength	194
Total	1,451

The specimens from Queensland were obtained from Mr. H. Stanley, M. Inst. C.E., Engineer-in-Chief for Railways. Those from Victoria from the Premier, the Hon. Duncan Gillies, Esq. Those from South Australia from the Forestry Department, and those from Western Australia from Mr. G. T. Poole, M. Inst. C.E., F.R.I.B.A. The botanical names were determined in every case from the flowers, seeds, and fruits of the various trees from which specimens were cut, by the botanical experts of the various colonies, and the following particulars were also supplied :—

Date when the tree was felled. Date when specimens were cut from it. Height and diameter of the tree. Average height and diameter of similar trees in the district. The locality formation and kind of soil, and the number of annular rings.

These particulars are recorded in the schedules. The botanical names have also been verified by Mr. J. H. Maiden, Consulting Botanist to the Department of Forests, New South Wales, and author of "Useful Native Plants of Australia." The neglect to obtain these particulars in the case of the other experiments referred to, and the uncertainty as to the identity of many of the trees from which specimens were obtained, is considered both by botanists and engineers to considerably reduce the value of the results obtained. It is also considered that the sizes of the specimens tested were in most cases too small and that, although the results arrived at may be

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relatively correct, they could not be applied with confidence to large size timber structures without a large factor of safety, excepting in the case of the experiments made by Mr. Watson, and the Railway Bridge Commission referred to. Again the apparatus used was generally rough, and no attempt was made to determine the shearing resistance along the grain, or the compressive strength, and although results of the direct tensile tests were published by Mr. Laslett in "Timber and Timber Trees" already referred to, they are absurdly incorrect and differ widely from those recorded in Table 8. Mr. Laslett, for instance, gives the tensile strength of ironbark as 8,377 pounds per square inch, whereas in the author's experiments the results were never less than 20,000 pounds per square inch, the highest recorded being 25,767 pounds per square inch.

The sizes of the timber experimented upon by the author were, as nearly as possible, those given in the following table :—

Tension pieces	3 feet	long	x	2¼	inches square.
Compression pieces	6	,,	,,	3	,,
,,	6	,,	,,	2	,,
,,	4	,,	,,	3	,,
,,	2	,,	,,	3	,,
,,	1	,,	,,	3	,,

Transverse pieces 4 feet 6 inches long x 6 inches wide x 4 inches deep.
Shearing along the grain, 6 inches long x 6 x 2¼ inches.

The tensile pieces were turned in a lathe to a form resembling that adopted for testing round specimens of metals, but with shoulders strong enough not to shear along the grain with a smaller force than would cause fracture in direct tension, and they were moreover considerably reduced in diameter along the length of 10 inches in which the elongations were measured, and in which the fracture ultimately occurred.

The transverse, compressive, and shearing specimens were planed up squarely on the four sides and ends.

The testing machine, with the arrangements for making the various tests referred to, is illustrated in Plate I, and the apparatus for drawing the stress-strain diagrams is illustrated in Plates I., II., and IIA.

The apparatus used for drawing stress-strain diagrams consists of a frame R, which is rectangular in plan, and which is attached to the cross-head of the testing machine in the manner shown on Plate II. There are two steel axes fixed to the end plates of the frame by means of lock nuts. One axis carries a brass drum 12 inches long, by 5 inches in diameter; the other axis carries a pulley D, fixed upon, or cast with, a brass pipe, E. A spiral groove is cut upon the pipe E, the pitch of which is ⅛ of an inch; there is also a spiral groove cut upon the end of the drum F, which is 2 inches pitch. The two spirals are connected by means of a piece of strong catgut, so that for ten revolutions of the spiral E the drum makes one revolution. The pulley D is made to revolve by means of a steel pianoforte wire, wound round its entire circumference, and passing upwards over guide pulleys, fixed to the ceiling and terminating in a weight of 14 pounds. The wire is led from the pulley D over a guide pulley C, fixed to the frame R, and two other guide pulleys R', arranged so as to lead the wire at the same level as the knife edge of the steel-yard (in order to eliminate the effect of the moment of the tension in the wire about the fulcrum of the steel-yard), and round a small drum V attached to the rider, from which the poise weight is suspended by means of a bracket. The wire on the drum is wound in or paid out by means

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of a handle on the drum which is controlled by a small friction brake. There is a strong clock spring inside the drum, so fixed that the revolution of the drum produced by winding the poise weight along the steel-yard is made to coil up the spring, and by winding the poise weight in the reverse direction the spring uncoils and brings back the drum to its original position. Thus the drum is made to revolve through an angle which is proportional to the distance through which the poise weight has been wound, and, therefore, proportional to the load on the specimen. The deflection or compression, as the case may be, is transmitted and recorded on the revolving cylinder in the following manner:—A steel rod H, square for a portion of its length, slides freely in bearings provided in the end plate frames, and also at the extremity of an overhanging bracket; the rod carries a slotted link in which slides a small roller, which is pressed against the sides of the link by the movement of the lever N. There is also a weighted pencil which can be adjusted and fixed to any position of the square rod between the end plates of the frame. The lever N is provided with knife edges, which are pressed by the forked end of the screwed rod S, as the specimen yields. The rod, S, slides, or is fixed in a bearing which is attached to the test specimen in the manner shown on Plate II.

In the compression tests the screwed rod S is attached by means of a union screw to a steel rod which is connected at its other end with the fixed compression block of the machine. The length of the rods is arranged according to the length of the specimen tested. Both in crossbreaking and in compression the yielding of the specimen is transmitted to the knife edges of the lever N as a simple harmonic motion which is reproduced, multiplied ten times on the sliding rod H, carrying the pencil M in the manner already referred to. A piece of sectional paper is wrapped round the cylinder and clipped, upon which the diagram, or diagrams, are drawn in the following manner:—The pencil is adjusted to the datum point on the paper by means of the adjusting screw T, and the adjustable connection of the steel wire with the poise weight. The force pump is then worked until the load upon the specimen is sufficient to raise the steel-yard and the poise weight suspended from it, which causes the specimen to yield and the pencil to draw a line parallel to the axis of the drum. The pumping is continued and the poise weight wound along the steel-yard, keeping it floating in a horizontal position, and balancing the load on the specimen. The length of the diagram may be increased by taking off the weights from the rod suspended from the steel-yard, which is always done when small specimens are tested. The sizes of the pulley D and the spiral grooves have been so made that the load can at once be read off on common sectional paper divided into inches and tenths.

To draw stress-strain diagrams for tension tests, the frame R, carrying the revolving cylinder, is fixed to the underside of the cast-iron longitudinal stays of the machine, and the lever N used in the cross-breaking and compression tests is removed. A second rectangular frame is attached to the upper side of the longitudinal stays before referred to. (See Plate IIA.) Three brass plates connected with two springs of bent steel, one on each side of the centre-plate, are arranged to move slightly upwards and downwards in a vertical plane between guide blocks, fixed to the rectangular frame. The centre-plate carries the bearings which support two levers having equal arms, and which turn with very little friction on conical centres. The end plates are attached to the rectangular frame by means of the screws W′, and there are two screws on each side W″, which are used to raise or lower the lever frame and adjust it to the size of the

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specimen. Two steel points are fixed, one to each of the levers, which are pressed slightly by means of the bent spring into corresponding holes in the test piece, spaced 10 inches apart. One of the levers carries two pulleys K and Q, the other an adjustable screwed rod J. A fine steel pianoforte wire is attached to the rod J, and led over the pulleys K and Q in the manner shown, and continued over a guide pulley P, the axis of which is carried by a bracket fixed to the longitudinal stays of the machine. A second axis O is also carried by this bracket upon which two pulleys of unequal size revolve together. The wire passes round the smaller pulley and terminates with the weight S. A very fine steel wire is connected to the circumference of the larger pulley and to one end of the rod H, which carries the pencil; the other end of the rod H is connected to a balance-weight by means of a similar wire passing over guide pulleys V′ and V″. The smaller pulley may be half or a quarter the diameter of the larger, multiplying two or four times, according to the size of the diagram required. The load is recorded on the revolving cylinder by winding the poise-weight as before. The elongation produced by the load is communicated to the pencil in the following manner:—The steel points of the levers resting in the small dots or holes in the test piece move further apart as the test piece elongates, and the pulley K moves towards the rod J, and raises the weight S; the friction of the wire in the V-shaped groove of the smaller pulley on the axis O causes it to revolve and with it the larger pulley which imparts a more or less magnified motion to the pencil. The lever carrying the rod J does not move unless the test piece slips in the clips, in which case the arrangement of the wire over the pulleys K and Q ensures that this movement will not be recorded as an elongation.

The bent spring keeps the points always in contact with the test piece. All the pulleys revolve upon conical centres. The apparatus was designed by J. A. McDonald, M. Inst. C.E., and the author, and made in the author's laboratory. Plates 3 to 35 show some of the autographic diagrams obtained.

Transverse Tests.—Table 3; plates 3 to 15 and 36, 37, and 44.

In drawing diagrams for transverse tests the poise weight suspended from the steel-yard at the division 10 was generally 250 lb., which corresponded to a load of 2,500 lb. on the specimen when the lever was floated by means of working the hand pump. In order to draw the complete diagram it is necessary to continue the straight portion of the diagram until it intersects the point on the sectional paper which corresponds to the zero for loads. The datum line from which the deflections are measured is drawn through this point, and if a small deflection should be produced in fixing the beam in the machine it is obviously eliminated by this process. The deflection of the specimen within the point where the deflection is proportional to the load producing it (*i.e.*, before the elastic limit is reached, which is recorded as a straight line in the diagram), is accurately determined by writing on the drum as it revolves the loads called out by the assistant minding the poise weight, the final breaking load being read off the steel yard.

The modulus of rupture was calculated in every case in preference to any constant, such as the "specific strength" used by General Ward and the Victorian and Queensland Boards before referred to. The modulus of rupture is much more convenient in practically applying the results of testing, and is equally simple; but it may be as well to show the relationship between them in order that the experiments made by the author may be compared

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with those already referred to. The bending moment in the centre of a beam loaded in the centre is $\frac{wl}{4}$, and the moment of resistance is $\frac{bd^2}{6}$.

$$\therefore \frac{wl}{4} = \frac{bd^2f}{6}$$

$$\text{and } f = \frac{3\,wl}{2bd^2}$$

Where w = Breaking load in pounds.
l = Span in inches.
b = Breadth of the beam in inches.
d = Depth " "
f = Modulus of rupture in pounds per square inch.

The specific strength referred to was calculated from the formula:—

$$s = \frac{w\,l}{4b\,d^2}$$

Hence, $f=6s$.

The modulus of transverse elasticity in pounds per square inch was calculated from the following formula:—

$$e = \frac{w\,l^3}{4v\,b\,d^3}$$

Where e = modulus of elasticity.
w = load producing deflection v, measured on the straight portion of the stress-strain diagram, generally from $\frac{1}{8}$ to $\frac{1}{10}$ of the actual breaking load.
v = deflection in inches produced by the load w.
b = breadth of the beam in inches.
d = depth of the beam in inches.

The diagram plates, 3 to 15, are taken from those drawn by the autographic stress-strain apparatus, the abscissæ representing the load in pounds and the ordinates the corresponding deflections in inches. Plates 36 and 37 and Plate 44 show the cross sections of the test pieces indicating the portion of the tree from which the specimen was cut.

Compression Tests.—Tables 4, 5, 6, 7; plates 16 to 34, 38 to 42, and 44.

The compressive strengths recorded in the tables referred to were obtained by dividing the load producing failure in pounds by the sectional area of the specimen in square inches. The specimens which were 1 foot long, corresponding with a ratio of length of 4 to 1, and those 2 feet long with a ratio of 8 to 1, failed in every case by direct crushing of the material, just as in the case of cubical specimens, there being no tendency to fail by lateral flexure.

The columns 16 to 1 generally failed by direct crushing, but a few failed by lateral flexure after the manner of failure of long columns, the load causing failure being about 10 per cent. less than the crushing strength of the material. The columns 24 to 1 failed in many cases by direct crushing, especially in the case of the best New South Wales timbers, but the columns 36 to 1 failed in every case by lateral flexure. The modulus of direct compressive elasticity has therefore been calculated and recorded for the 1 foot and 2 feet lengths only, the following formula being used:—

$$e = \frac{w\,l}{b}$$

Where l denotes the original length of the specimen in inches.
w denotes the load in pounds per square inch producing the compression denoted by l.
e denotes the modulus of compressive elasticity in pounds per square inch.

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The compression b is measured for use in the formula well within the point where the strains cease to be proportional to the stresses producing them, or it may be scaled off the straight portion of the autographic stress-strain diagram.

It has not been thought necessary to calculate constants for use in Rankine's, Gordon's, or Euler's formulæ for the strength of long columns as the proportions experimented upon cover all the cases likely to arise in engineering practice. The load per square inch producing failure, whether by direct crushing alone, or more or less by lateral flexure, may be obtained from an inspection of the tables when the ratio of the length to the smallest lateral dimensions is known, and the safe working stress determined by allowing a factor of safety consistent with the conditions and circumstances of the case. In order to facilitate the determination of the sections of timber compression members in structures, Table 10 has been prepared giving the comparative strength of long and short columns of Australian timber per square inch of sectional area, with the modulus of transverse elasticity in each case. Table 10 furnishes data for the construction of formulæ after the kind investigated by Rankine, Gordon, Shaler Smith, and Euler; but the author considers that Table 10 renders such formulæ unnecessary, especially as none of these formulæ represent all the conditions actually existing, and are only approximately true within the limits covered by the experiments from which the various constants have been determined. Plates 16 to 34 show the stress-strain diagrams, and 38 to 42 and Plate 44 show sections of the test pieces.

Tension Tests.—Table 8; plates 35 and 43 and 44.

The tensile strength was determined by dividing the load producing fracture in pounds by the sectional area of the specimen in square inches. The extensions corresponding with the various loads applied were measured in every case both with Professor Kennedy's extensometer, and with the stress-strain apparatus before referred to, but the results, although accurately determined for the specimens tested, were very irregular. Thus, a timber specimen with a twisted fibre would sometimes remain unaltered in length until about one-third of the breaking load was applied, and then yield suddenly. On the other hand, some specimens gave a diagram in which the elongation was proportional to the load up to about two-thirds of the breaking load, as shown in Plate 35. It was therefore decided not to record the modulus of tensile elasticity. The autographic stress-strain diagrams are shown on Plate 35 and the sections of the test pieces on Plates 43 and 44.

Shearing Tests.—Table 9.

The shearing strengths of the various timbers along the grain were determined by means of the special apparatus illustrated in Plate I., the specimens used being 6 inches long by 4 inches by 2 inches. The shearing strength per square inch recorded in the table is found by dividing the total load producing shearing in pounds by the area of the plane sheared in square inches. Since the shearing stresses developed in two planes at right angles to each other are of equal intensity, it follows that timber will always shear along and never across the plane of the fibres. The results recorded are useful in the design of wedges in timber joints, and also in compound beams consisting of two or more ordinary beams bolted together with wedges arranged to resist the horizontal shearing stresses.

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General Remarks on the Results of Tests Recorded.

In the experiments on beams of Australian timber failure occurred generally from the crushing of the fibres on the concave side of the beam, followed immediately by the tearing of the fibres on the convex side of the beam. In some few cases, owing to the presence of gum veins, failure occurred by shearing longitudinally near the neutral axis. The reason for this behaviour may be seen by inspecting the tables of results of testing, which show that the tensile strength is about double the compressive, while the modulus of rupture is slightly less than the tensile strength. For instance, the compressive strength of the best ironbark timber is about 10,000 pounds per square inch, the tensile strength 22,000, and the modulus of rupture 18,000 pounds per square inch. The resistance to shearing along the grain is much greater in Australian timber than in pine or oak, and it frequently reaches 2,000 pounds per square inch. It is not, however, proportional to the tensile compressive, or the transverse strengths.

The shearing resistance of red gum timber is not much below that of good ironbark, but the compressive, transverse, and tensile strengths are frequently not much greater than one-half those of good ironbark. Blackwood timber is inferior to ironbark in compressive, transverse, and tensile strength, but superior in its resistance to longitudinal shearing along the fibres.

Australian timber differs considerably in its resistance to stresses, as well as in various other qualities from that grown in other countries. For instance, the results obtained in testing red and yellow pine and spruce timber in the experiments made at the Watertown Arsenal, Massachusetts, and recorded in the reports of the United States Government, show that failure took place as often by longitudinal shearing along the fibres as by compression and tearing of the extreme fibres. Direct experiments on the shearing resistance proved that the beams were just as likely to fail by longitudinal shearing as by the compression and tension of the extreme fibres. If the modulus of rupture is known and the resistance of the particular timber to shearing longitudinally along the fibres at the neutral axis is also known, the ratio of depth to span may be found such that the tendency to shear shall be about equal to the tendency to fail by the direct stresses due to bending.

Let W denote the total breaking load distributed uniformly along the beam.

l „ the span.

b „ the breadth.

d „ the depth.

f „ the modulus of rupture.

S „ the resistance to shearing along the fibres.

M „ the maximum bending moment.

R „ the moment of resistance.

F „ the maximum intensity of horizontal shearing stress.

Then—

$$M = \frac{Wl}{8}; \quad R = \frac{bd^2f}{6}; \quad \therefore W = \frac{4fbd^2}{3l} \qquad (1.)$$

$$F = \frac{3W}{4bd} = S; \quad \therefore W = \frac{4bdS}{3}. \qquad (2.)$$

From (1) and (2) $\frac{d}{l} = \frac{S}{f}$.

If the load is concentrated at the centre we obtain

$$\frac{d}{l} = \frac{2S}{f}.$$

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If the timber is ironbark f would be about 18,000 pounds per square inch and S about 2,000 pounds per square inch, and the best proportion of depth to span $\frac{d}{l} = \frac{2,000}{18,000} = \frac{1}{9}$ for a distributed load and $\frac{2}{3}$ for a concentrated load. In a similar manner the best proportions may be obtained for other loads and other timbers. It follows, therefore, that with the ordinary proportions used in practice there will be no danger of failure by shearing.

Specific Gravity and Shrinkage and Loss of Weight during Seasoning.

The specific gravity and the weight per cubic foot are important, as they are not only useful in distinguishing between timbers of similar appearance with a view to determining their names, but also for determining the degree of seasoning by comparing the weight of the particular timber in question with the weights of similar timbers, the degree of seasoning of which is known.

The specific gravity of five kinds of timber were determined by Mr. A. Helms, M.A. Ph. D., in the following manner. The specimens were prepared as one inch cubes, and were kept five days in open air at a temperature of from 15 to 19 degrees C. They were then dried three hours in a water bath at a temperature of 96 degrees C, varnished and dried one hour in a water bath, and kept again three days in the open air at from 15 to 19 degrees C. The specific gravity was taken in each case at a temperature of 17 degrees C. The results are given in the following table :—

Name of Timber.	Weight in Air.	Weight in Water.	Difference.	Specific Gravity.
Grey Ironbark	20·0610	3·0714	16·9896	1·1807
Red Ironbark	20·0510	2·6620	17·3890	1·1531
Spotted Gum	15·1715	1·6790	16·8505	0·9003
Blackbutt	16·0265	0·1410	16·1675	0·9912
Woollybutt	15·7605	0·5200	16·2805	0·9680

The weights per cubic foot have been deduced from the results given in the above, and compared with the result obtained by direct weighing and measuring in the following table :—

Name of Timber.	Weight per cubic foot deduced from experiments made by Dr. Helms in lbs.	Weight per cubic foot obtained by direct measuring and weighing in lbs.
Grey Ironbark	73·79375	73·854
Red Ironbark	72·06870	76·522
Spotted Gum	56·26870	62·195
Blackbutt	61·95000	65·539
Woollybutt	60·50000	63·895

Both Dr. Helms and the author consider that the results obtained by direct weighing and measuring are at least as satisfactory as those obtained from the specific gravities, as the want of delicacy in the former method is compensated for by the fact that a better average of the timber is obtained

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from the large scantlings than from the one inch cubical specimens; and it was, therefore, not considered necessary to find the specific gravity of the remaining specimens.

The results are recorded in the tables of transverse strength, No. 3, as the timbers which were subsequently tested in cross-breaking were both weighed and measured. The cross-breaking specimens were preferred on account of their larger size, with a view of obtaining a better average.

All the Australian timbers decrease in weight and shrink in dimensions until they are thoroughly seasoned, but the shrinkage is not proportional to the loss of weight as may be seen by inspecting Table I., which has been prepared in order to show the amount of the shrinkage and loss of weight during seasoning. It is necessary to state, however, that the end shrinkage in the various specimens could not well be determined since they were tested before being remeasured. The end shrinkage is not very great, and would not alter appreciably the percentages of shrinkage and loss of weight given in the table referred to. The increase in strength and elasticity of the seasoned over the unseasoned timbers is very decided, as may be seen by inspecting the tables of the results of testing, No. 3 to No. 9, and comparing the strength and elasticity of the seasoned with the unseasoned timber.

Since natural seasoning takes a good deal of time, it has been proposed to dry the timber in ovens or kilns, or to immerse the timber in water, or to steam it.

The author has prepared Table No. 2, in order to show the decrease in strength of the artificially dried timber with timber naturally seasoned. The timber referred to as artificially seasoned was prepared by kiln drying at the works of Messrs. Hudson Bros., Sydney, and was sent to the author by the Railway Commissioners to be tested with a view to ascertain whether the process referred to could be used advantageously in preparing timber for the manufacture of rolling stock.

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SCHEDULE of Particulars of New South Wales

Local Name.	Botanical Name.				Mark.	Number.	Date when tree was felled.	Date when tree was cut up.
Red Ironbark....	Eucalyptus paniculata.	F. v. M.	N. O. Myrtaceæ....		B	2	8 Dec., 1886	12 Jan., 1887
,, ,, ...	,,	,,	,,	....	B	16	30 June, 1887	26 Aug., 1887
,, ,, ...	,, leucoxylon	,,	,,	....	P	4	14 July, 1887	12 Oct., 1887
Black ,, ...	,, ,,	,,	,,	....	L	2	27 Jan., 1889	10 Feb., 1889
Grey ,, ...	,, crebra	,,	,,	....	B	1	10 Oct., 1886	11 Jan., 1887
,, ,, ...	,, ,,	,,	,,	....	B	17	30 June, 1887	26 Aug., 1887
White ,, ...	,, ,,	,,	,,	....	D	1	18 April, 1887	4 May, 1887
,, ,, ...	,, ,,	,,	,,	....	P	5	13 July, 1887	11 Oct., 1887
Tallow-wood	,, microcorys	,,	,,	....	M	1	26 Nov., 1886	28 Nov., 1886
,, *....	,, ,,	,,	,,	....	F	3	July or Aug.,'86	12 May, 1887
,, ...	,, ,,	,,	,,	....	P	2	14 July, 1887	11 Oct., 1887
Blackbutt	,, pilularis	Sm.	,,	....	M	3	26 Nov., 1886	28 Nov., 1886
,, †.....	,, ,,	,,	,,	....	F	1	July or Aug.,'86	11 May, 1887
,, ...	,, ,,	,,	,,	....	B	4	— June, 1886	24 Jan., 1887
,, ...	,, ,,	,,	,,	....	B	22	23 June, 1887	1 Sep., 1887
,, ...	,, ,,	,,	,,	....	P	1	16 July, 1887	12 Oct., 1887
Spotted Gum	,, maculata	Hk.	,,	....	M	2	26 Nov., 1886	28 Nov., 1886
,, ,, ...	,, ,,	,,	,,	....	B	3	— June, 1886	22 Jan., 1887
,, ,, ...	,, ,,	,,	,,	....	B	14	30 June, 1887	26 Aug., 1887
,, ,, ...	,, ,,	,,	,,	....	C	4	18 July, 1887	19 Oct., 1887
Red ,, ...	,, tereticornis	Schl.	,,	....	1, 2, 3 M	1, 2, 3	— May, 1886	8 Feb., 1887
,, ,, ...	,, ,,	,,	,,	....	B	11	29 June, 1887	25 Aug., 1887
,, ,, ...	,, ,,	,,	,,	....	C	6	18 July, 1887	19 Oct., 1887
Flooded ,, ...	,, saligna	Sm.	,,	....	A	3	18 April, 1887	3 May, 1887
,, ,, ‡..	,, ,,	,,	,,	....	F	5	July or Aug. '86	13 May, 1887
,, ,, ...	,, ,,	,,	,,	....	P	8	16 July, 1887	12 Oct., 1887
Grey ,, §..	,, ,,	,,	,,	....	F	4	July or Aug.,'86	20 Jan., 1887
,, ,, ...	,, tereticornis	,,	,,	....	P	7	13 July, 1887	11 Oct., 1887
Slaty ,, ..	(= ,, bicolor / ,, largiflorens	A. Cunn. / F.v.M.)	,,	....	L	—	— April, 1889	— April, 1889
Ribbon ,, ...	,, viminalis		,,	....	K		— Aug., 1889	— Aug., 1889
Mountain ,, / or Grey ,, ..	,, goniocalyx	F.v.M.	,,	....	J	—	— Aug., 1889	— Aug., 1889
Mountain Gum..	,,	,,	,,	....	B	19	4 July, 1887	16 Sep., 1887
Woollybutt.....	,, longifolia.	Link & Otto.	,,	....	B	5	— June, 1886	24 Jan., 1887
,, ...	,, ,,	,,	,,	....	B	15	30 June, 1887	26 Aug., 1887
Mahogany‖	,, resinifera.	Sm.	,,	....	F	2	July or Aug.,'86	14 May, 1887
Forest Mahoga'y¶	,, ,,	,,	,,	....	D	4	— Feb., 1887	5 May, 1887
,, ,, ...	,, ,,	,,	,,	....	P	11	18 July, 1887	13 Oct., 1887
Swamp Mahogany	,, robusta.	,,	,,	....	B	6	18 April, 1887	22 April, 1887
,, ,, ...	,, ,,	,,	,,	....	B	10	29 June, 1887	25 Aug., 1887
,, ,, ...	,, ,,	,,	,,	....	P	12	11 July, 1887	14 Oct., 1887
Mountain Ash	(= ,, virgata. / ,, sieberiana.	Sieb. / F. v. M.)	,,	....	B	7	15 April, 1887	26 April, 1887
,, ,, ...	,, ,,	,,	,,	....	B	18	4 July, 1887	16 Sep., 1887

* An old tree, 9 inches pipe. Fifteen specimens from the same tree. † From an old tree decayed at heart, 12 inches pipe. no pipe. Fifteen specimens from the same tree; one of these, 5″ by 3″, is under the size given, there being no suitable the numerous sun-cracks. ‖ An old tree, 6 inches pipe. Fifteen specimens from same tree. ¶ Those marked with O

NOTE.—The natural growth and blending of the annular rings into each other renders it impossible to arrive at a

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Timbers sent with the specimens for testing.

Height of tree in feet.	Diam. of tree in inches.	Number of rings in Diameter.	Average height of trees in locality.	Average Diam. of trees in locality.	Locality whence obtained.	Formation and kind of soil.
about	about	about	feet.	inches.		
96	34	110	50 to 100	24 to 36	Parish of Benandra, Co. of St. Vincent.	Slate; stony ridges; poor.
180	29	95	100 ,, 200	24 ,, 36	Parish of Clyde, Co. of St. Vincent ..	Slate; stony ranges and spurs.
134	29	161	80 ,, 100	22 ,, 36	Forest Reserve, 121, north of Bellinger River, Macleay District.	Tree grown on the slope of a gravel ridge; soil, stiff yellow clay.
35	48	60	40	36	Parish of Goodiman, Co. of Bligh....	Ironstone; tree grown on a gravelly ridge
99	30	130	50 to 100	24 to 36	Parish of Benandra, Co. of St. Vincent.	Slate; stony ridges; poor soil.
160	30	86	100 ,, 200	24 ,, 36	Parish of Clyde, Co. of St. Vincent..	Slate; stony ranges and spurs.
100	24	108	120	24	South Grafton Forest Ridges	Ironstone; poor soil; clay sub-soil.
130	28	114	80 to 150	22 to 36	Forest Reserve, 121, north of Bellinger River, Macleay District.	Tree grown on the slope of a quartz ridge; soil, white pipe-clay nature.
150	33	90	150	33	Bullahdelah	Altered sedimentary formation; fair depth of soil; slopes and gullies.
130	31	115	100 to 120	30 to 36	Parish of Tanban, Co. of Dudley	
105	32	125	90 ,, 140	30 ,, 48	Forest Reserve, 121, north of Bellinger River, Macleay District.	Granite formation; grown on the slope of a gravel ridge; soil, stiff yellow clay.
150	30	80	150	30	Bullahdelah	Altered sedimentary formation; top and sides of stony ridges.
150	36	120	120 to 130	48	Parish of Tanban, Co. of Dudley....	Decomposed granite; clay soil.
110	36	92	60 ,, 110	24 to 48	Parish of Benandra, Co. of St. Vincent.	Quartz and slate; poor soil.
137	32	64	100 ,, 150	24 ,, 48	Parish of Woodburn, Co. of St. Vincent	Sandstone; sandy soil.
135	34	142	100 ,, 150	30 ,, 48	Forest Reserve, 121, north of Bellinger River, Macleay District.	Granite; tree grown on the slope of a gravel ridge; soil, stiff yellow clay.
130	27	70	130	27	Bullahdelah	Altered sedimentary; open low land soil; generally clayey.
100	28	80	70 to 120	24 to 48	Parish of Benandra, Co. of St. Vincent.	Slate; poor soil.
180	30	66	100 ,, 200	24 ,, 48	Parish of Benandra, Co. of St. Vincent.	Slate; poor, stony soil.
57	46	105	..	..	Coraki	Sandy loam.
34ft. to fork.	30	..	80 to 90	30 to 42	Moira State Forest, Co. of Cadell	Alluvial; subject to annual inundation; clay loam.
100	26	60	80 ,, 120	24 ,, 42	Parish of Mogendowra, Co. of St. Vincent.	Granite; good alluvial soil.
53	42	..	..	..	Coraki	Sandy loam.
154	48	50	130 to 160	36 to 48	Cowarra Reserve, Par. of Queen's Lake, A. O. Lauriton, Co. of Macquarie.	Level; moist and swampy scrub.
110	29	95	110 ,, 120	30	Parish of Tanban, Co. of Dudley	Decomposed granite; clayey soil.
150	32	156	100 ,, 150	30 to 48	Forest Reserve, 121, north of Bellinger River, Macleay District.	Tree grown on black soil; flat, near bank of creek.
150	33	90	140 ,, 150	30 ,, 36	Forest of Tanban, Co. of Dudley	Alluvial soil; flooded land.
130	32	138	100 ,, 140	18 ,, 36	Forest Reserve, 121, north of Bellinger River, Macleay District.	Tree grown on top of quartz ridge; soil, white pipe-clay nature.
50	36	50	30 ,, 70	24 ,, 36	Parish of Goodiman, Co. of Bligh	Sandstone; tree grown in hilly country
120	42	..	150	36	Parish of Cathcart, Montgomery's Mill	Vegetable soil and loam.
150	42	..	150	36	Parish of Cathcart, Montgomery's Mill	Vegetable soil and loam.
160	40	120	100 to 200	24 to 28	Parish of Murrengenburg, Co. of St. Vincent.	Slate; good open soil.
110	36	86	80 ,, 150	24 ,, 48	Parish of Benandra, Co. of St. Vincent.	Alluvial; fairly good soil.
160	31	76	80 ,, 180	24 ,, 48	Parish of Benandra, Co. of St. Vincent.	Alluvial; good porous soil.
120	33	110	100 ,, 120	30	Parish of Tanban, Co. of Dudley	Decomposed granite; clayey soil.
140	26	198	140	26	North Arm, Clarence River	Forest ridges; red soil.
140	39	214	80 to 150	30 to 48	Forest Reserve, 121, north of Bellinger River, Macleay District.	Tree grown on top of a gravel ridge; soil, stiff yellow clay.
50	36	80	50 ,, 70	24 ,, 36	Moruya, Co. of St. Vincent.	Alluvial and swampy sour soil.
130	29	86	100 ,, 150	24 ,, 48	Parish of Mogendowra, Co. of St. Vincent.	Alluvial and swampy sour soil.
98	28	172	60 ,, 90	22 ,, 30	Forest Reserve, 121, north of Bellinger River, Macleay District.	Boggy swamp, near north bank of Bellinger; timber very faulty.
100	30	80	80 ,, 150	24 ,, 48	Parish of Monga, Co. of St. Vincent.	Granite; stony soil.
120	32	96	80 ,, 130	24 ,, 48	Parish of Monga, Co. of St. Vincent.	Granite; stony ridges; poor soil.

Fifteen specimens, as per size, from the same tree. ‡ Fully matured tree, 4 inches pipe. § Fairly matured tree; sound timber left to make the third 6″ by 4″ required. The timber having lain in the mill-yard since January will account for additional felled some years ago.
correct estimate of the number of rings on a rough surface, although this may be done on a polished surface.

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SCHEDULE of Particulars of New South Wales

Local Name.	Botanical name.	Mark.	Number.	Date when tree was felled.	Date when tree cut up.
Mountain Ash ..	Elaeocarpus grandis. F. v. M. N. O. Tiliaceæ	C	3	4 July, 1887	10 Sep., 1887
Stringy-bark	Eucalyptus piperita. ,, N. O. Myrtaceæ....	A	4	19 April, 1887	3 May, 1887
,, ...	,, eugenioides. Sieb. ,, ...	C	5	18 July, 1887	19 Oct., 1887
,, ...	,, macrorrhyncha, F. v. M. ,, ...	B	12	6 July, 1887	26 Aug., 1887
,, ...	Eucalyptus haemastoma (?). N. O. Myrtaceæ	I	..	Aug., 1889	Aug., 1889
,, ...	,, obliqua. ,, ...	S	..	Aug., 1889	Aug., 1889
Messmate	,, amygdalina var. Labill. ,, ...	B	20	4 July, 1887	7 Sep., 1887
,, ...		P	6	19 July, 1887	12 Oct., 1887
Grey Box	,, polyanthema. Schau. ,, ...	D	2	May, 1885	May, 1887
Brush or White Box	,, hemiphloia. F. v M. ,, ...	B	9	6 July, 1887	25 Aug., 1887
,, ,, .	,, ,, ,, ,, ...	P	10	11 July, 1887	11 Oct., 1887
Bloodwood	,, corymbosa. Sm. ,, ...	P	9	11 July, 1887	11 Oct., 1887
,, ...	,, ,, ,, ,, ...	B	13	7 July, 1887	26 Aug., 1887
Blackwood	Acacia melanoxylon. R. Br. N. O. Leguminoseæ.	B	8	20 April, 1887	30 April, 1887
,, ...	,, ,, ,, ,, ,, ...	B	21	4 July, 1887	19 Sep., 1887
Forest Oak	Casuarina torulosa. Ait. ,, ,, ...	A	1	19 April, 1887	3 May, 1887
.....	,, , ,, ,, ,, ...	A	0	5 May, 1887	5 May, 1887
,, ...	,, ,, ,, ,, ,, ...	P	13	13 July, 18	12 Oct., 1887
Turpentine*	Syncarpia laurifolia. Ten. N. O. Myrtaceæ	A	2	13 April, 1887	3 May, 1887
,, ...	,, ,, ,, ,, ...	B	23	23 June, 1887	3 Sep., 1887
,, ...	,, ,, ,, ,, ...	P	3	16 July, 1887	14 Oct., 1887
Pine	Araucaria Cunninghamii. Ait. N. O. Coniferæ.....	D	3	15 April, 1887	5 May, 1887
,, ...	,, ,, ,, ,, ...	C	7	18 July, 1887	19 Oct., 1887
,, ...	,, ,, ,, ,, ...	P	17	22 Aug., 1887	17 Nov., 1887
Rosewood	Dysoxylon Fraseranum. Benth. N. O. Meliaceæ	D	5	15 April, 1887	5 May, 1887
,, ...	,, ,, ,, ,, ...	P	16	19 July, 1887	14 Oct., 1887
Coachwood .... or Leather Jacket..	Ceratopetalum apetalum. Don. ,, Saxifrageæ..	B	24	2 Aug., 1887	26 Sept., 1887
	,, ,, ,, ,,	P	14	18 July, 1887	13 Oct., 1887
Black Bean	Castanospermum Australe. A. Cun. ,, Leguminoseæ	C	1	4 July, 1887	10 Sept., 1887
Red Bean	Dysoxylon Muelleri. Benth.	C	2	4 July, 1887	10 Sept., 1887
White Beech	Gmelina Leichhardtii. F. v. M. ,, Verbenaceæ..	P	15	19 July, 1887	14 Oct., 1887
Negro Head, or White Beech ..	Fagus Moorei. F. v. M. ,, Cupuliferæ..	P	18	22 Aug., 1887	20 Nov., 1887
Red Cedar	Cedrela toona. Roxb. ,, Meliaceæ (= Cedrela Australis. F. v. M.)	P	19	22 Aug., 1887	24 Nov., 1887

* All specimens cut from the same tree.

NOTE.—The natural growth and blending of the annular rings into each other renders it impossible to arrive at a

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Timbers sent with the specimens for testing—*continued.*

Height of tree in feet.	Diam. of tree in inches.	Number of rings in diameter.	Average height of trees in locality.	Average diam. of trees in locality.	Locality whence obtained.	Formation, and kind of soil.
about	about	about	feet	inches		
60	42	203	..	..	Co. of Rous	Basaltic; chocolate soil.
110	30	50	90 ,, 110	18 to 30	Cowarra Reserve, Parish of Queenslake, A.O. Lauriton, Co. of Macquarie.	Ridges; red soil.
62	54	140	..	..	Coraki	Sandy loam.
90	24	65	70 ,, 100	18 to 30	Parish of Mogendowra, Co. of St. Vincent.	Granite; stony ridges; poor soil.
150	36	..	150	36	Parish of Cathcart, Montgomery's Mill.	Vegetable soil and loam.
150	36	..	150	36	Parish of Cathcart, Montgomery's Mill.	Vegetable soil and loam.
140	36	112	100 to 200	24 to 60	Parish of Monga, Montgomery's Mill.	Granite; poor soil.
100	33	153	80 ,, 120	24 ,, 36	Forest Reserve, 121, north of Bellinger River, Macleay District.	Pipeclay flat; timber very faulty.
90	20	123	90	20	South Grafton Forest Ridges	Ironstone; poor soil; clay sub-soil.
100	30	110	80 to 120	24 ,, 36	Parish of Mogendowra, Co. of St. Vincent.	Granite; good alluvial soil.
70	38	130	60 ,, 100	30 ,, 42	Forest Reserve, 121, north of Bellinger River, Macleay District.	Tree grown on the slope of a gravel ridge; soil, black loamy nature.
75	27	139	70 ,, 100	24 ,, 36	Forest Reserve, 121, north of Bellinger River, Macleay District.	Tree grown on the slope of a gravel ridge; soil, black loamy nature.
110	30	70	70 ,, 100	24 ,, 36	Parish of Mogendowra, Co. of St. Vincent.	Slate; very poor soil.
80	22	70	50 ,, 100	18 ,, 30	Parish of Mogendowra, Co. of St. Vincent.	Basaltic; stony; porous soil.
80	20	80	50 ,, 100	12 ,, 24	Parish of Murrengenburg, Co. of St. Vincent.	Trap; good, rich porous soil.
74	15	45	60 ,, 80	11 ,, 13	Cowarra Reserve, Parish of Queen's Lake, A. O. Lauriton, Co. of Macquarie.	Undulating; subsoil
62	18	32	50 ,, 70	15 ,, 20	Cowarra Reserve, Parish of Queen's Lake, A. O. Lauriton, Co. of Macquarie.	Yellow clay.
90	22	108	50 ,, 60	10 ,, 14	Forest Reserve, 121, north of Bellinger River, Macleay District.	Tree grown on the slope of a gravel ridge; soil, stiff yellow clay.
126	30	128	100 ,, 130	18 ,, 30	Cowarra Reserve, Parish of Queen's Lake, A.O. Lauriton, Co. of Macquarie.	Undulating; subsoil clayey.
120	33	90	80 ,, 150	24 ,, 48	Parish of Woodburn, Co. of St. Vincent.	Sandstone and basaltic; good porous soil.
100	34	182	80 ,, 140	22 ,, 42	Forest Reserve, 121, north of Bellinger River, Macleay District.	Black soil; flat.
149	26	198	140	26	West Camp, Nymboida.....	Trap; scrub soil.
70	50	180	—	—	Goolmangar	Basaltic; chocolate shale.
110	38	456	100 to 150	48 to 60	On the tableland at the head of the Clarence waters.	Slate and shale; rich chocolate soil.
70	15	100	100	24	West Camp, Nymboida.....	Trap; scrub soil.
90	38	186	80 to 100	36 to 48	Benville Creek, North of Bellinger River, near Dividing Range.	Alluvial flat on the bank of Melville Creek.
93	34	106	60 to 120	18 to 36	Parish of Broughton, Co. of Camden	Basalt; rich red loam soil.
60	24	105	50 to 60	18 to 24	Pine Creek, North of Bellinger River, a tributary of Benville Creek.	Alluvial flat on the bank of Pine Creek.
115	48	—	—	—	Co. of Rous	Basaltic; chocolate soil.
80	51	—	—	—	Co. of Rous	Basaltic; chocolate soil.
110	38	141	90 to 130	24 to 48	Benville Creek, North of Bellinger River, near Dividing Range.	Alluvial flat on the bank of Benville Creek.
100	42	420	80 to 100	36 to 48	On the tableland at the head of the Clarence waters.	Slate and shale; rich chocolate soil.
112	49	392	100 to 150	36 to 72	On the tableland at the head of the Clarence waters.	Slate and shale; rich chocolate soil.

correct estimate of the number of rings on a rough surface, although this may be done on a polished surface.

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SCHEDULE of Particulars of Victorian, South Australian, Western

Local Name.	Botanical Name.			Mark.	Number.	Date when tree was felled.	Date when tree was cut up.
							VICTORIAN
Blue Gum	Eucalyptus globulus.	Lab.	N. O. Myrtaceæ	M.	1	12 April, 1888	7 June, 1888
Mountain Ash ..	,, amygdalina.	,,	,, ...	M.	2	5 June, 1888	26 June, 1888
Red Gum	,, rostrata.	Schl.	,, ...	M.	3	19 June, 1888	21 June, 1888
Blackwood	Acacia melanoxylon.	R. Br.	N. O. Leguminoseæ	B.V.	..	— Jan., 1888	— Dec., 1888
Mahogany	Eucalyptus botryoides.	Sm.	N. O. Myrtaceæ	M.V.	..	— Jan., 1888	— Dec., 1888
							SOUTH AUSTRALIAN
Sugar Gum.....	Eucalyptus corynocalyx.	F. v. M.	N. O. Myrtaceæ	S.A.	1	5 May, 1887	— May, 1888
Box	,, hemiphloia.	,,	,, ...	S.A.	2	— April, 1887	— April, 1888
,, ...	,, ,,	,,	,, ...	S.A.	2A	— April, 1888	— May, 1888
Blue Gum	,, leucoxylon.	,,	,, ...	S.A.	3	— Mar., 1887	— April, 1888
,, ...	,, ,,	,,	,, ...	S.A.	3A	— Jan., 1887	— April, 1888
Red Gum	,, rostrata.	Schl.	,, ...	S.A.	4	— May, 1887	— May, 1888
,, ...	,, ,,	,,	,, ...	S.A.	4A	— May, 1887	— May, 1888
							WESTERN AUSTRALIAN
Jarrah	Eucalyptus marginata.	Sm.	N. O. Myrtaceæ	M.C.D.	1	27 Mar., 1888	2 April, 1888
,, ...	,, ,,	,,	,, ...	M.C.D.	4	— Nov., 1887	— Oct., 1888
,, ...	,,	,,	,, ...	No. 1	..	13 Aug., 1891	17 Aug., 1891
,, ...	,,	,,	,, ...	No. 2	..	13 Aug., 1891	17 Aug., 1891
Red Gum	,, calophylla.	R. Br.	,, ...	M.C.D.	2	27 Mar., 1888	2 April, 1888
Karri	,, diversicolor.	F.v. M.	,, ...	M.C.D.	3	1 May, 1888	4 May, 1888
,, ...	,, ,,	,,	,, ...	D.	K	.....	.....
							QUEENSLAND
Ironbark	Eucalyptus siderophloia.	Benth.	N. O. Myrtaceæ	A.	..	30 Mar., 1889	21 June, 1889
Spotted Gum	,, maculata.	Hook.	,, ...	C.	..	30 Aug., 1888	30 June, 1889
Tallewwood	,, microcorys.	F. v M.	,, ...	D.	..	30 Dec., 1888	30 June, 1889
Bloodwood	,, corymbosa.	Sm.	,, ...	F.	..	30 Aug., 1888	30 June, 1889
Turpentine	Syncarypia laurifolia.	Ten.	,, ...	G.	..	28 Feb., 1889	30 June, 1889

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Australian, and Queensland timbers sent with the specimens for testing.

Height of tree.	Diameter of tree.	Number of rings.	Average height of trees in locality.	Average diameter of trees in locality.	Locality whence obtained.	Formation and kind of soil.
TIMBERS.						
feet. about	inches. about	about	feet.	inches.		
150	49 at bottom 32 at top.	160	160	60	Yaugher	Light black.
No. 1, 245	42	112	250	16 to 18 feet.	Mt. Monda, Victoria Forest.....	Granite porphyry; plutonic rocks; soil decomposed vegetation.
No. 2, 240	38	98				
129	32	..	136	36	Barmah and Yielima State Forest, in the Parish of Picola.....	Tertiary; soil clay.
40	39	20	40	36 to 48	Lake's Entrance, Gippsland	Sandy.
45	48	35	40 to 60	48 to 60	Snowy River, Gippsland...	Rich.
TIMBERS.						
about	about	about				
104	34	100	110	..	Wirrabarra Forest	Sandstone, varying to granite; granite sandstone and also quartz.
50	16	52	50 to 80	..	Wirrabarra Forest	Mixed formation; sandstane and granite.
66	24	69	50 to 80	..	Wirrabarra Porest	Mixed formation; sandstone and granite.
72	30	72	60 to 80	..	Wirrabarra Forest	Mixed formation; sandstone and granite.
83	22	80	60 to 80	..	Wirrabarra Forest	Mixed formation; sandstone and granite.
87	66	98	80 to 100	..	Wirrabarra Forest	Mixed formation; sandstone and granite.
74	46	103	70 to 100	..	Wirrabarra Forest	Mixed formation; sandstone and granite.
TIMBERS.						
about	about					
130	60	In Jarrah the rings are not clearly defined.	120 to 130	..	Karridale Saw Mills, 15 miles N.W. of C. Leeuwin and 190 miles S. of Perth	Red ironstone rock and gravel. The worse the soil the better the timber.
60	36		75	..	Darling Ranges	Ironstone ridges.
120	46	..	120	40	Canning District, Darling Range	Rough rocky ironstone hills.
140	60	..	140	50	Canning District, Darling Range	Yellow loamy soil, intermixed with ironstone gravel.
175	72	..	175	..	Karridale Saw Mills	Black loam. Red Gum land is considered the best agricultural land in the southern districts of Western Australia.
275	108	..	200	.	Karridale Saw Mills	Limestone outcrop; red loam.
—	..	..	..	..	Sent by the Melbourne Harbour Trust.	
TIMBERS.						
about	about					
45	30	..	..	..	Logan District	Sandy loam.
35	27	..	..	..	Logan District	Sandy loam.
30	33	..	..	..	Logan District.....	Sandy loam.
40	20	..	..	..	Logan District.....	Sandy loam.
40	18	..	..	..	Logan District.....	Sandy loam.

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TABLE No. 1.—Shrinkage and Loss of Weight in Seasoning.

Name.	Distinguishing number and letter.	Size when measured in 1887. Length.	Breadth.	Thickness	Weight per cubic foot in 1887.	No. of days seasoning when tested in 1887.	Size when measured in 1890. Length.	Breadth.	Thickness	Weight per cubic foot in 1890.	No. of days seasoning when measured in 1890.	Shrinkage per cent.	Decrease in weight per cent.	No. of days between measurements.
		in.	in.	in.	lbs.		in.	in.	in.	lbs.				
Red Ironbark	B 2.1	54·0	6·00	4·00	76·52	58	54·0	5·93	3.90	73·50	1,249	5·26	3·94	1,191
	B 2.2	54·2	5·90	3·90		121	54·2	5·71	3·80		1,232			1,111
	B 2.3	54·1	5·91	3·92		121	54·1	5·67	3·82		1,232			1,111
Grey Ironbark	B 1.1	54·0	6·03	4·10	73·85	117	54·0	5·91	3·97	72·64	1,308	4·85	1·638	1,191
	B 1.2	54·0	6·10	4·14		121	54·0	5·94	4·04		1,308			1,187
	B 1.3	53·9	5·92	4·00		197	53·9	5·77	3·92		1,308			1,111
White Ironbark	D 1.1	53·9	5·98	3·84	73·55	51	53·9	5·78	3·77	68·44	1,119	4·62	6·94	1,068
	D 1.2	54.5	5·99	3·86		51	54·5	5·82	3·78		1,119			1,068
	D 1.3	53·8	5·96	3·97		51	53·8	5·80	3·92		1,119			1,068
Tallowwood ..	M 1.1	54·0	6·00	4·00	70·95	59	54·0	5·86	3·95	64·98	1,261	4·25	8·41	1,202
	M 1.2	54·0	5.90	3·96		59	54·0	5·75	3·88		1,261			1,202
	M 1.3	54·0	6·00	4·00		59	54·0	5·82	3·93		1,261			1,202
	F 3.1	54·1	5·88	3·91	77·06	297	54·1	5·81	3·83	60·20	1,348	3·59	21·0	1,052
	F 3.2	54·0	5·92	3·92		298	54·0	5·80	3·83		1,349			1,052
Blackbutt....	B 4.1	54·1	5·90	4·03	66·69	241	54·1	5·73	3·84	61·21	1,351	6·62	8·217	1,110
	B 4.2	54·1	5·89	3.96		241	54·1	5·71	3·80		1,351			1,110
	B 4.3	54·1	5·86	3·98		241	54·1	5·68	3·89		1,351			1,110
	M 3.1	54·0	5·90	4·00	62·115	60	54·0	5·63	3·87	60·28	1,261	8·14	3·115	1,201
	M 3.2	54·0	5·80	3·95		60	54·0	5·60	3·85		1,261			1,201
	M 3.3	54·0	5·87	3·94		60	54·0	5·44	3·78		1,261			1,201
	F 1.1	54·1	5·91	3·90	66·69	285	54·1	5·81	3·78	55·94	1,346	4·76	16·12	1,061
	F 1.2	54·0	5·94	3·92		285	54·0	5·85	3·78		1,346			1,061
	F 1.3	54·1	5·93	3·92		289	54·1	5·84	3·80		1,341			1,052
Spotted Gum	M 2.1	54·0	5·92	3·98	71·123	58	54·0	5·77	3·94	63·47	1,260	4·6	10·76	1,202
	M 2.2	54·0	5·90	3·94		58	54 0	5·75	3·80		1,260			1,202
	M 2.3	54.0	5·90	3·94		58	54·0	5·77	3·85		1,260			1,202
	B 3.1	54·1	5·86	3·95	62·19	330	54·1	5·63	3·85	55·98	1,441	6·39	9·98	1,111
	B 3.2	54·1	5·90	3·99		331	54·1	5·76	3·84		1,441			1,110
	B 3.3	53·9	5·89	3·99		331	53·9	5·66	3·87		1,441			1,110
Red Gum	1M 1.1	54·6	5·87	3·96	62·19	273	54·6	5·55	3·91	56·41	1,382	5·21	9·31	1,109
	1M 1.2	54·8	5·88	3·96		273	54·8	5·72	3·89		1,382			1,109
	2M 1.3	54·5	5·89	3·97		362	54·5	5·70	3·92		1,464			1,102
Flooded Gum	A 3.1	54·2	5·96	3·96	69·34	54	54·2	5·62	3·83	55·2	1,119	9·53	20·39	1,065
	A 3.2	54.2	5·94	3·92		54	54·2	5·60	3·80		1,119			1,065
	A 3.3	54·2	5·96	3·96		54	54·2	5·50	3·83		1,119			1,065
	F 5.1	54·1	5·88	3·92	77·94	331	54·1	5·67	3·82	70·98	1,379	4·73	8·94	1,048
	F 5.2	54·1	5·92	3·88		331	54·1	5·68	3·80		1,379			1,048
	F 5.3	54·2	5·88	3·84		331	54·2	5·80	3·82		1,379			1,048
Grey Gum ..	F 4.1	54·2	4·76	3·06	57·33	329	54·2	4·70	3·00	45·3	1,380	3·69	20·98	1,051
	F 4.2	54·1	5·80	3·86		329	54·1	5·70	3·77		1,380			1,051
Woollybutt ..	B 5.1	54·1	5·88	3·94	63·89	241	54·1	5·58	3·82	58·14	1,351	6·77	9	1,110
	B 5.2	53·8	5·86	3·94		242	53·8	5·61	3·88		1,351			1,110
	B 5.3	54·2	5·84	3·95		242	54·2	5·51	3·91		1,351			1,109
Mahogany ..	F 2.1	54·0	5·94	3·88	75·06	328	54·0	5·87	3·80	62·21	1,380	3·93	17·11	1,380
	F 2.2	54·0	5·94	3·88		328	54·0	5·82	3·77		1,380			1,380
	F 2.3	54·0	5·94	3·87		328	54·0	5·80	3·80		1,380			1,380
Forest Mahogany	D 4.1	54·2	6·03	3·90	72·23	54	54·2	5·78	3·74	62·23	1,120	5·86	13·08	1,066
	D 4.2	54·1	5·96	3·88		54	54·1	5·69	3·77		1,120			1,066
	D 4.3	54·5	5·89	3·89		58	54·5	5·61	3·73		1,120			1,062
Swamp Mahogany	B 6.1	54·9	5·91	3·96	75·98	51	54·9	5·46	3·80	61·6	1,119	9·9	18·22	1,068
	B 6.2	55·8	5·95	3 86		51	55·8	5.70	3·78		1,119			1,068
	B 6.3	54·7	5.92	3·90		51	54·7	5·42	3·71		1,119			1,068
Mountain Ash	B 7.1	55·1	5·96	3.95	66·57	54	55·1	5·60	3·66	55·61	1,120	11·13	14·96	1,066
	B 7.2	54·7	5·98	3·96		55	54·7	5·66	3·76		1,120			1,065
	B 7.3	54·6	5·93	3·94		58	54·6	5·72	3·65		1,120			1,062
Stringy Bark	A 4.1	54·1	6·00	3·97	71·33	52	54·1	5·77	3·84	57·24	1,117	6·72	19·75	1,065
	A 4.2	54·2	5·96	3·96		55	54·2	5·78	3·84		1,117			1,062
	A 4.3	54·2	5·97	3·96		56	54·2	5·71	3·84		1,117			1,061
Grey Box	D 2.1	54·0	5·95	3·87	73·62	768	54·0	5·68	3·76	67·73	1,836	8·53	8	1,068
	D 2.2	54·1	5·91	3·88		768	54·1	5·56	3·74		1,836			1,068
	D 2.3	54·4	5·94	3·88		768	54·4	5·56	3·77		1,834			1,066
Blackwood ..	B 8.1	54·9	6·02	4·10	70·58	51	54·9	5·90	4·04	45·5	1,116	2·55	35·5	1,065
	B 8.2	56·0	5·96	4·04		51	56·0	5·88	4·00		1,116			1,065
	B 8.3	55·1	5·99	4·03		54	55·1	5·92	4·00		1,116			1,062

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TABLE No. 1.—Shrinkage and Loss of Weight in Seasoning—*continued.*

Name.	Distinguishing number and letter.	Size when measured in 1887. Length.	Breadth.	Thickness.	Weight per cubic foot in 1887.	No. of days seasoning when tested in 1887.	Size when measured in 1890. Length.	Breadth.	Thickness.	Weight per cubic foot in 1890.	No. of days seasoning when measured in 1890.	Shrinkage per cent.	Decrease in weight per cent.	No. of days between measurements.
		in.	in.	in.	lbs.		in.	in.	in.	lbs.				
Forest Oak ..	A 0.1	54·0	6·00	3·91	75·48	51	54·0	5·82	3·89	61·72	1,116	4·12	4·98	1,065
	A 0.2	54·1	5·96	3·91		36	54·1	5·80	3·83		1,101			1,065
	A 0.3	54·1	5·98	3·98		36	54·1	5·86	3·90		1,101			1,065
Turpentine ..	A 2.1	53·9	5·98	3·95	69·34	54	53·9	5·46	3·71	57·03	1,119	14·33	17·75	1,065
	A 2.2	54·0	5·94	3·93		54	54·0	5·24	3·77		1,119			1,065
	A 2.3	54.0	5·99	3·97		54	54.0	5·42	3·80		1,119			1,065
Pine	D 3.1	54·2	6·04	3·87	54·31	55	54·2	5·76	3·77	37·14	1,121	5·57	31·61	1,066
	D 3.2	54·3	5·96	3·90		55	54·3	5·83	3·83		1,121			1,066
	D 3.3	54·1	5·99	3·88		55	54·1	5·80	3·78		1,117			1,062
Rosewood....	D 5.1	54·3	5·87	3·84	74·29	54	54·3	5·70	3·81	50·32	1,122	3·56	32·13	1,068
	D 5.2	54·1	5·88	3.84		54	54·1	5·78	3·78		1,122			1,068
	D 5.3	54·0	5·90	3·85		54	54·0	5·78	3·78		1,122			1,068
White Beech..	D 6.1	54·3	6·02	3·85	63·03	38	54·3	5·90	3·83	52·87	1,104	2·29	15·96	1,066
	D 6.2	54·0	6·04	3·96		38	54·0	5·90	3·84		1,104			1,066
	D 6.3	54·3	5·99	3·96		42	54·3	5·88	3·91		1,104			1,062
Australian Teak	F 6.1	57·6	5·92	3·89	62·9	..	57·6	5·70	3·77	58·24	....	6·59	7·4	1,061
	F 6.2	57·4	5·94	3·86		..	57·4	5·70	3·79		....			1,061
	F 6.3	57·6	5·89	3·87		..	57·6	5·64	3·74		....			1,061

TABLE No. 2.—Showing the average relative strength of the Timbers artificially dried in kilns by Messrs. Hudson Brothers, Sydney, and that of similar timbers seasoned naturally.

Local Name.	Transverse Strength. Weight in lb. per cubic foot.	Number of days seasoning.	Modulus of Rupture in lb. per sq. inch.	Compressive Strength. Number of days seasoning.	Strength in lb. per sq. inch.	Tensile Strength. Number of days seasoning.	Strength in lb. per sq. inch.	Shearing Strength. Number of days seasoning.	Strength in lb. per sq. inch.	Remarks.
Tallowwood	77	298	15,257	365	7,585	305	16,165	365	1,802	Naturally seasoned.
,, ...	65	311	19,228	830	9,510	708	15,786	928	2,030	,, ,,
,, ...	75	..	11,686	..	6,533	..	15,760	..	1,402	Artificially seasoned.
Blackbutt	67	276	13,729	311	7,497	224	21,708	372	1,757	Naturally seasoned.
,, ...	57	679	18,035	841	9,724	721	25,131	938	2,086	,, ,,
,, ...	66	..	12,662	..	..	..	13,199	..	1,196	Artificially seasoned.
Blackwood	71	51	10,264	28	6,784	40	14,884	81	2,033	Unseasoned, the weight decreased to 45 lb. per cubic foot in 719 days.
,, ...	37	672	12,434	903	7,584	724	15,639	938	2,743	Naturally seasoned.
,, ...	47	471	10,576	660	6,325	520	16,553	720	1,437	,, ,,
,, ...	71	..	11,810	..	6,444	..	18,733	..	1,833	Artificially seasoned.
,, ...	51	..	11,662	..	5,232	..	..	..	..	,,
Cedar	28	833	3,505	793	2,895	..	..	951	1,416	Naturally seasoned.
,, ...	41	..	5,539	..	4,031	..	..	890	1,228	Artificially seasoned.

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TABLE No. 3.—Transverse strength of

Local Name.	Number and Letter.	Size of Specimen in Inches. Length.	Breadth	Thickness.	Weight in lbs. per Cubic Foot.	Breaking Load in lbs.	Modulus of Rupture in lbs. per Sq. Inch.
Red Ironbark	B 2.1	54·00	6·00	4·00	76·5	21,500	16,125
,,	B 2.2	54·20	5·90	3·90		20,500	16,448
,,	B 2.3	54·10	5·91	3·92		20,500	16,253
,,	B 16.1	53·25	5·60	3·77	72·6	22,000	19,901
,,	B 16.2	52·50	5·60	3·77		21,500	19,949
,,	B 16.3	52·75	5.65	3·80		22,750	20,042
,,	P 4.1	52·50	5·51	3·67	72·9	24,125	23,406
,,	P 4.2	52·50	5·51	3·69		23,687	22,732
,,	P 4.3	52·25	5·61	3·80		17,125	15,220
Black Ironbark	L 2.1	53·62	5·73	3·51	70·5	13,925	14,235
,,	L 2.2	53·62	5·80	3·70		14,750	13,375
,,	L 2.3	53·62	5·80	3·71		14,700	13,257
Grey Ironbark	B 1.1	54·00	6·03	4·10	73·9	25,000	17,758
,,	B 1.2	54·00	6·10	4·14		25,000	17,216
,,	B 1.3	53·90	5·92	4·00		24,500	18,623
,,	B 17.1	52·87	5·66	3·80	74·7	22,750	20.042
,,	B 17 2	53·12	5·56	3·80		25,000	22,420
White Ironbark	D 1.1	53·95	5·98	3·84	73·5	19,625	16,024
,,	D 1.2	54·50	5·99	3·86		21,250	17,143
,,	D 1.3	53 80	5·96	3·87		23,000	17,629
,,	P 5.1	52·62	5·75	3·92	69·6	25,000	20,370
,,	P 5.2	52·25	5·57	3·88		24,125	20,715
,,	P 5.3	52·00	5·64	3·88		23,375	19,822
Tallow-wood	M 1 1	54·00	4·00	6·00	..	21,000	10,500
,,	M 1.2	54·00	3·96	5·90		22,000	11,491
,,	M 1.3	54·00	4·00	6·00		24,000	12,000
,,	F 3.1	54·15	5·88	3·91	77·1	18,125	14,517
,,	F 3.2	54·00	5·92	3·92		18,375	14,543
,,	F 3.3	54·18	5·76	3·72		18,500	16,711
,,	P 2.1	52·62	5·57	3·59	64·9	20,310	19,281
,,	P 2.2	52·37	5·70	3·87		22,125	18,660
,,	P 2.3	52·12	5·54	3·84		21,250	19,745
Blackbutt	M 3.1	54·00	4·00	5·90	..	18,000	9,308
,,	M 3.2	54·00	3·95	5·80		21,000	11,379
,,	M 3.3	54·00	3·94	5·87		21,500	11,402
,,	F 1.1	54·10	5·91	3·90	66·7	16,500	13,216
,,	F 1·2	54·00	5·94	3·92		17,500	13,804
,,	F 1.3	54 10	5·93	3·92		16,750	13,235
,,	B 4.1	54·10	5·90	4·03	66·7	18,700	14,051
,,	B 4.2	54·10	5·89	3·96		17,000	13,252
,,	B 4.3	54·10	5·86	3·98		19,100	14,815
,,	B 22.1	53·50	5·50	3·64	57·9	16,750	16,550
,,	B 22.2	52·62	5·50	3·77		20,000	18,421
,,	B 22.3	52·50	5·52	3·68		19,125	18,627
,,	P 1.1	52·62	5·65	3·87	55·9	22,500	19,145
,,	P 1.2	52·62	5·66	3·97		19,550	16,351
,,	P 1.3	52·25	5·64	3·87		22,425	19,115
Spotted Gum	M 2.1	54·00	3·98	5·92	..	24,000	12,388
,,	M 2.2	54·00	3·94	5·90		24,000	12,599
,,	M 2.3	54·00	3·94	5·90		24,000	12,599
,,	B 3.1	54·10	5·86	3·95	62·2	18,500	14,568
,,	B 3.2	54·10	5·90	3·99		15,000	11,498
,,	B 3.3	53·90	5·89	3·99		18,000	13,821
,,	B 14.1	54·37	5·66	3·80	54·1	19,000	16,738
,,	B 14.2	53·75	5·88	3·79		19,600	16,709
,,	B 14.3	53·75	5·75	3·85		18,560	15,679
,,	C 4.46	54·48	5·91	3·97	63·6	22,700	17,552
,,	C 4.47	54·24	5·84	3·92		24,500	19,657
,,	C 4.48	54·48	5·85	3·97		24,500	19,132
Red Gum	1 M 1.1	54·60	3·96	5·87	62·2	7,250	5,671
,,	1 M 1.2	54·80	3·96	5·88		11,725	6,166
,,	2 M 3	54·50	3·97	5·89		17,125	8,953
,,	B 11.1	54·25	5·54	3·74	70·9	15,275	14,192
,,	B 11.2	52·50	5·54	3·70		20.000	18,986
,,	B 11.3	54·37	5·50	3·74		15,250	14,272
,,	C 6.76	54·33	5·85	3·93	68·4	14,000	11,156
,,	C 6.77	54.36	5·80	3·94		16,650	13,419
,,	C 6.78	54·48	5·75	3·95		19,000	15,604
Flooded Gum	A 3.1	54·20	5·96	3·96	69·4	17,000	13,096
,,	A 3.2	54·20	5·94	3·92		13,500	10,649
,,	A 3.3	54·20	5·96	3·96		16,000	12,326
,,	F 5.1	54·12	5·88	3·92	77·9	21,875	17,431
,,	F 5.2	54·14	5·92	3·88		21,250	17,167
,,	F 5.3	54·20	5·88	3·84		22,000	18,269

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New South Wales timbers.

Modulus of Elasticity in lbs. per Sq. Inch.	No. of Days Seasoning.	Deflection in Inches.							Remarks.
		2,500 lb.	5,000 lb.	10,000 lb.	12,500 lb.	15,000 lb.	17,500 lb.	20,000 lb.	
2,400,000	58	·075	·150	·300	....	·460	....	....	19,000 lb. gave ·67″ deflection.
2,306,572	121	·090	·180	·320	....	·470	....	·660	
2,318,836	121	·085	·170	·330	·423	....	....	....	13,000 „ ·44″ „
2,775,300	554	·083	·165	·340	....	·505	....	·720	
2,559,400		·090	·178	·360	....	·540	·660	....	
2,662,900		085	·170	·333	....	·520	·630	....	
3,715,100	671	·088	·170	·335	....	·505	....	·722	
2,833,800		·090	·172	·336	....	·500	....	·705	
2,703,200		·085	·165	·315	....	·470	....	....	Faulty specimen.
2,425,600	360	·115	·275	·645	....	....	....	....	Good sound timber.
1,680,500		·140	·283	·570	·770	....	....	....	„ „ „
1,667,000		·140	·285	·575	·810	....	....	....	„ „ „
2,716,499	117	·060	·120	·250	....	·380	....	·560	
2,559,107	121	·060	·120	·260	....	·390	....	·560	21,000 lb. gave 62″ deflection.
2,178,791	197	·085	·170	·330	·402	....	....	....	14,000 „ ·45″ „
2,781,950	675	·080	·150	·300	....	·455	....	·660	
2,332,000		·080	·140	·303	....	·453	....	·628	Cracked through.
2,916,157	51	·070	·140	·295	....	·465	....	....	18,000 lb. gave ·62″ „
2,994,610		·077	·134	·285	....	·434	....	·640	
2,471,295		·075	·150	·304	....	·440	....	....	21,000 lb. „ ·66″ „
2,722,800	682	·075	·150	·285	....	·415	....	·565	
3,601,100		·076	·156	·290	....	·426	....	·592	
2,788,300		·077	·157	297	....	·428	....	·596	
....	59	..	....	....	....	....	....	....	Unseasoned.
1,523,024		·055	·110	·220	....	·310	....	·470	„
1,367,272		·055	·110	·210	....	·310	....	....	16,000 lb. gave ·35″ „
1,966,509	297	·100	·200	·400	....	·620	·790	....	
2,153,680	298	·090	·180	·365	....	·580	....	....	
2,742,418	298	085	·170	·340	....	·540	·675	....	
2,688,700	311	·094	·187	·365	....	·540	·662	....	
2,676,100		·080	·160	·316	....	·456	·536	....	
2,871,200		·085	·175	·340	....	·517	·633	....	
1,536,432	60	·055	·110	·220	....	....	....	....	Unseasoned.
1,454,779		·060	·120	·240	....	·415	....	....	
1,784,695		·050	·100	·200	....	·340	....	....	
1,923,528	285	·102	·205	·400	....	·700	....	....	
1,981,319	285	·098	·195	·388	....	·670	....	....	
1,984,660	294	·098	·195	·400	....	·725	....	....	
2,433,319	241	·070	·140	·310	....	·530	....	....	17,000 lb. gave ·66″ „
2,315,101		·075	·150	·350	....	·650	....	....	
2,338,659		·080	·160	·320	....	·550	....	....	18,000 „ ·74″ „
2,314,900	689	·110	·215	·430	....	·720	....	....	
2,526,100		·095	·185	·355	....	·550	·705	....	Broke along a gum vein.
2,432,400		·105	·205	·395	....	·615	·815	....	
2,633,950	668	·082	·165	·325	....	·480	....	....	
2,421,450		·087	·174	·327	....	·477	·577	....	Sheared along a gumvein horizontally.
2,486,900		·087	·175	·335	....	·490	·590	....	
1,674,116	58	·050	·100	·200	....	·300	....	....	22,000 lb. gave ·555″ deflection. Unseasoned
2,086,678		·040	·080	·165	....	·265	....	·400	Unseasoned.
1,984,405		·043	·085	·180	....	·280	....	·410	„
2,126,534	330	·090	·180	·360	....	·630	....	....	
1,800,394	331	·100	·200	·420	....	....	....	....	13,000 lb. gave ·7″ deflection.
2,241,376	331	·080	·160	·340	....	·660	....	....	
2,472,900	668	·090	·178	·350	....	·580	·790	....	
2,347,100		·092	·187	·367	....	·577	·767	....	
2,340,500		·090	·182	·358	....	·587	·790	....	
2,956,700	372	·062	·122	·247	....	·372	....	·527	
3,056,300		·060	·125	·253	....	·330	....	·545	
3,125,000		·063	·123	·250	....	·375	....	·575	
630,898	273	·280	·640	....	....	....	....	....	6,500 lb. gave ·96″ deflection.
741,494	273	·160	·310	·690	....	....	....	....	
912,915	362	·090	·200	·420	....	·800	....	....	
2,168,130	669	·110	·225	·455	....	·765	....	....	Knot.
2,239,200		·110	·220	·440	....	·690	....	....	Sound. Straight grain.
2,183,900		·110	·220	·435	....	·690	....	....	Knot in middle.
1,899,100	372	·105	·206	·416	·515	....	....	....	
1,948,400		·102	·207	·412	....	....	....	....	
2,167,300		·108	·208	·376	....	·620	·758	....	
1,778,617	54	·108	·210	·430	....	·735	....	....	
1,717,143		·108	·225	·410	·575	....	....	....	
2,334,435		·085	·160	·370	·505	....	....	....	
2,236,284	331	·087	·175	·375	....	·563	....	·780	
2,351,624		·085	·170	·335	....	·515	....	·804	
2,442,384		·085	·170	·343	....	·520	....	·765	

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TABLE No. 3.—Transverse strength of

Local Name.	Number and Letter.	Size of Specimen in Inches. Length.	Breadth	Thickness.	Weight in lbs. per Cubic Foot.	Breaking Load in lbs.	Modulus of Rupture in lbs. per Sq. inch.
Flooded Gum	P 8.1	52·25	5·78	3·66	55·0	17,250	16,041
,,	P 8.2	52·12	5·62	3·88		15,875	13,510
,,	P 8.3	52·12	5·63	3·65		15,000	14,399
Grey Gum	F 4.1	54·20	4·76	3·06	57·3	7,750	12,519
,,	F 4.2	54·12	5·64	3·72		16,250	14,991
,,	F 4.3	54·08	5·80	3·86		14,125	11,768
,,	P 7.1	52·12	5·66	3·89	70·3	22,935	19,281
,,	P 7.2	52·25	5·72	3·87		16,000	13,447
,,	P 7.3	52·25	5·61	3·83		22,875	20,015
Slaty Gum	L 1.1	55·25	5·73	6·20	77·7	50,500	16,508
,,	L 1.2	57·50	5·82	5·94		35,350	12,393
,,	L 1.3	55·37	5·92	5·91		39,000	13,580
Ribbon Gum	K 1	54·00	5·01	3·64	58·3	8,650	9,382
,,	K 2	53·75	5·00	3·72		9,625	10,018
,,	K 3	54·12	5·00	3·72		8,950	9,313
Mountain Gum, or Grey Gum	J 1	53·87	5·41	3·51	69·6	12,325	13,314
,, ,,	J 2	53·87	5·41	3·82		14,125	12,589
,, ,,	J 3	....	....	....		....	....
Mountain Gum	B 19.1	53·00	5·34	3·75	50·9	15,000	14,382
,,	B 19.2	54·25	5·54	3·70		14,250	13,528
,,	B 19·3	53·00	5·52	3·72		13,250	12,489
Woollybutt	B 5.1	54·10	5·88	3·94	63·9	15,400	12,147
,,	B 5.2	53·80	5·86	3·94		16,000	12,664
,,	B 5.3	54·20	5·84	3.95		16,850	13,314
,,	B 15.1	52·62	5·64	3·79	63·9	17,500	15,553
,,	B 15.2	52·62	5·66	3·76		18,000	16,196
,,	B 15.3	52 87	5·69	3·76		17,000	15,216
Mahogany	F 2.1	54·05	5·94	3·88	75	17,000	13,688
,,	F 2.2	54·05	5·94	3·88		18,500	14,895
,,	F 2.3	54·05	5·92	3·87		18,625	14,917
Forest Mahogany	D 4.1	54·20	6·03	3·90	72·2	18,125	14,228
,,	D 4.2	54·10	5·96	3·88		15,500	12,438
,,	D 4.3	54·50	5·89	3·89		18,125	14,642
,,	P 11.1	52·62	5·67	3·85	59·8	19,500	16,705
,,	P 11.2	52·25	5·51	3·66		20,000	18,125
,,	P 11.3	52·50	5·60	3·70		20,250	17,965
Swamp Mahogany	B 6.1	54·80	5·91	3·94	75·9	13,750	10,791
,,	B 6.2	55·80	5·95	3·86		15,500	12,588
,,	B 6.3	54·70	5·92	3·90		16,250	12,994
,,	B 10·1	54·12	5·62	3·74	52·5	12,500	11,449
,,	B 10.2	54·12	5·40	3·78		15,800	14,744
,,	B 10.3	54·00	5·38	3·80		15,250	14,463
,,	P 12.1	52·12	5·56	3·83	56·7	12,125	10,704
,,	P 12.2	52·75	5·59	3·77		12,250	11,101
,,	P 12.3	52·62	5·68	3·78		14,250	12,642
Mountain Ash	B 7.1	55·10	5·96	3·95	66·6	15,500	12,001
,,	B 7.2	54·70	5·98	3·96		14,000	10,749
,,	B 7.3	54·60	5·93	3·94		15,125	11,830
,,	B 18.1	53·87	5·64	3·74	53·9	14,500	13,232
,,	B 18.2	54·12	5·72	3·62		16,250	15,618
,,	B 18.3	54·37	5·56	3·54		13,750	11,286
,,	C 3.31	54·48	5·98	3·85	41·5	15,000	12,184
,,	C 3.32	54·24	5·78	3·85		14,400	12,102
,,	C 3.33	54·48	5·97	3·97		13,500	10,330
Stringy Bark	A 4.1	54·10	6·00	3·97	71·3	19,250	14,657
,,	A 4.2	54·25	5·96	3·96		17,750	13,674
,,	A 4.3	54·25	5·97	3·96		17,500	13,462
	C 5.61	54·24	5·65	3·85	58·6	16,750	14,400
	C 5.62	54·48	5·84	3·79		16,750	14,376
,,	C 5.63	54·48	5·81	3·90		16,525	13,461
,,	B 12.1	53·75	5·62	3·78	58·3	17,250	15,360
,,	B 12.2	54·87	5·65	3·80		17,375	15,438
,,	B 12.3	54·00	5·82	3·83		18,437	15,549
Smooth Top Stringybark	I 1.	53·50	5·40	3·70	50·9	11,450	11,152
,, ,,	I 2.	53·75	5·40	3 70		10,500	10,226
,,	I 3.	53·62	5·40	3·70		10,500	10,226
Stringybark, or Victorian Messmate	S. 1.	54·00	5·50	3·51	65·2	10,000	10,601
,, ,,	S. 2.	54·00	5·51	3·61		12,050	12,364
,, ,,	S. 3.	53·87	5·50	3·63		11,370	11,296
Messmate	B 20.1	55·37	5·57	3·70	52·2	14,300	13,503
,,	B 20.2	54·37	5·57	3·68		16,750	15,846
,,	B 20.3	53·00	5·62	3·56		15,750	16,210
,,	P 6.1	51·87	5·72	3·83	56·7	19,800	16,991
,,	P 6.2	52·12	5·70	3·86		17,875	15,154
,,	P 6.3	52·50	5·73	3·85		17,435	14,780

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New South Wales timbers—*continued.*

Modulus of Elasticity in lbs. per Sq. Inch.	No. of Days Seasoning.	Deflection in Inches. 2,500 lb.	5,000 lb.	10,000 lb.	12,500 lb.	15,000 lb.	17,500 lb.	20,000 lb.	Remarks.
2,546,890	673	·098	·194	·435	....	....	....	....	
1,976,300		·109	·210	·475	·695	....	....	....	
2,066,900		·125	·235	·510	....	....	....	....	Cracked.
1,987,432	329	·255	·510	....	....	....	....	....	
2,390,652		·100	·200	·417	·585	....	....	....	
2,072,115		·100	·200	·434	....	....	....	....	
2,589,000	678	·082	·164	·232	....	·493	·618	....	
2,381,400		·090	·180	·360	....	·550	....	....	
2,671,500		·084	·170	·340	....	·520	....	....	
1,807,500	232	·056	·116	·235	·286	·340	·400	....	
1,511,100		·075	·148	·290	·365	·440	·520	....	Broke and sheared longitudinally
1,571,200		·071	·142	·281	·357	·448	....	....	" " "
1,243,700	252	·230	·460	....	....	....	....	....	
1,475,500		·182	·362	....	....	....	....	....	
1,482,500		·180	·365	....	....	....	....	....	
1,403,700	252	·150	·300	·670	....	....	....	....	Sound.
1,375,200		·114	·228	·485	....	....	....	....	
....	....	....	....	....	....	....	....	....	Bad specimen—not tested.
1,888,100	672	·130	·258	·520	·687	....	....	....	
1,734,600		·142	·340	·650	....	....	....	....	
1,676,000		·145	·300	·630	·680	....	....	....	
2,079,282	241	·095	·190	·360	....	....	....	....	
2,012,110	241	·090	·180	·410	....	·880	....	....	
2,329,939	242	·080	·180	·340	....	·770	....	....	
2,046,500	675	·110	·220	·430	....	·700	....	....	
2,088,500		·110	·221	·430	....	·678	....	....	
2,077,500		·110	·220	·430	....	·780	....	....	
2,097,001	328	·095	·190	·390	....	·595	....	....	
2,414,728		·082	·165	·334	....	·520	....	....	
2,263,388		·089	·178	·365	....	·550	....	....	
2,760,544	54	·065	·140	·303	....	·468	....	....	
3,514,097	54	·060	·113	·305	....	·500	....	....	
2,848,010	58	·065	·140	·280	....	·510	....	....	Split at 11,250 lbs.
2,914,600	674	·075	·145	.325	....	....	....	....	
1,914,000		·098	·190	·377	....	·625	·805	....	
2,744,800		·084	·163	·339	....	·524	·679	....	
2,331,974	51	·082	·164	·350	·450	....	....	....	
1,836,251		·110	·220	·456	·595	....	....	....	
2,127,877		·092	·185	·365	....	·610	....	....	
1,567,330	668	·150	·315	·651	·930	....	....	....	
1,543,030		·122	·247	·500	·658	....	....	....	Knot near centre.
2,036,000		·115	·231	·470	·618	....	....	....	
1,886,900	681	·120	·235	·470	....	....	....	....	Gum veins.
2,001,200		·118	·223	·470	....	....	....	....	"
2,100,800		·110	·215	·452	·650	....	....	....	"
2,045,400	54	·092	·184	·365	·450	....	....	....	
2,068,114	55	·090	·180	·375	·460	....	....	....	
2,049,167	58	·093	·186	·370	·455	....	....	....	
2,231,100	672	·105	·202	·410	·519	....	....	....	
2,087,900		·122	·240	·482	·612	....	....	....	
2,160,600		·130	·260	·518	....	....	....	....	
1,617,300	386	·118	·228	·458	·588	....	....	....	
1,854,200		·117	·237	·462	....	....	....	....	
1,577,200		·126	·246	·496	....	....	....	....	
2,375,632	52	·078	·155	·311	....	·450	·645	....	
2,490,065	55	·075	·150	·294	....	·500	....	....	
2,193,436	56	·085	·170	·340	....	·550	....	....	
1,869,000	372	·119	·242	·480	....	·735	....	....	
1,812,100		·110	·220	·445	·680	....	....	....	
1,506,500		·125	·250	·494	....	·725	....	....	
1,897,790	663	·120	·230	·450	....	·705	....	....	Knot in centre
2,123,300		·105	·208	·423	....	·665	....	....	
1,838,100		·115	·227	·440	....	·677	....	....	
1,831,200	252	·138	·275	....	....	....	....	....	Bad specimen; cracked at ends.
1,440,000		·175	·345	....	....	....	....	....	" "
1,579,400		·160	·320	....	....	....	....	....	
1,761,300	252	·165	·335	....	....	....	....	....	
1,596,700		·167	·342	·827	....	....	....	....	
1,946,200		·135	·280	·650	....	....	....	....	
1,841,600	672	·130	·265	·530	·710	....	....	....	Broke through knot.
2,146,000		·115	·240	·475	·610	·790	....	....	
2,134,900		·130	·260	·523	·685	....	....	....	
2,201,100	666	·100	·200	·380	....	·580	....	....	
2,247,500		·096	·191	·376	....	·580	....	....	
2,253,200		·096	·190	·390	....	·600	....	....	

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TABLE No. 3.—Transverse strength of

Local Name.	Number and Letter.	Size of Specimen in Inches. Length.	Breadth	Thickness.	Weight in lbs. per Cubic Foot.	Breaking Load in lbs.	Modulus of Rupture in lbs. per Sq. inch.
Grey Box	D 2.1	54·00	5·95	3·87	73·6	19,500	15,755
,,	D 2.2	54·10	5·91	3·88		20,325	16,448
,,	D 2.3	54·40	5·94	3·88		20,400	16,425
Brush, or White Box	B 9.1	53·62	5·60	3·75	67·1	20,937	19,144
,, ,,	B 9.2	53·50	5·58	3·80		18,875	16,866
,, ,,	B 9.3	53·37	5·48	3·78		20,000	18,433
,, ,,	P 10.1	52·62	5·64	3·86	58·1	15,500	13,281
,, ,,	P 10.2	52·75	5·60	3·77		15,875	14,328
,, ,,	P 10.3	52·50	5·53	3·74		14,125	12,875
Bloodwood	P 9.1	52·50	5·87	3·80	60·1	13,000	11,050
,,	P 9.2	52·50	5·75	3·87		17,500	14,430
,,	P 9.3	52·50	5·71	3·85		21,625	18,418
,,	B 13.1	54·12	5·70	3·79	55·4	15,375	13,520
,,	B 13.2	53·62	5·60	3·75		12,000	10,971
,,	B 13.3	53·00	5·88	3·82		16,000	13,426
Blackwood	B 8.1	54·90	6·02	4·10	70·6	13,500	9,605
,,	B 8.2	56·00	5·96	4·04		19,250	14,243
,,	B 8.3	55·10	5·99	4·03		9,375	6,938
,,	B 21.1	53·87	5·73	3·82	37·3	15,000	12,925
,,	B 21.2	54·37	5·85	3·73		13,000	11,503
,,	B 21.3	54·00	5·84	3·79		15,000	12,875
Forest Oak	A 0.1	54·00	6·00	3·91	75·4	20,900	15,698
,,	A 0.2	54·15	5·96	3·91		18,750	14,816
,,	A 1.3	54·15	5·98	3·98		21,000	15,962
,,	P 13.1	53·00	5·59	3·70	63·9	14,875	13,995
,,	P 13.2	52·00	5·62	3·74		18,250	16,715
,,	P 13.3	52·12	5·58	3·63		17,500	17,136
Turpentine	A 2.1	53·90	5·98	3·95	69·3	16,125	12,443
,,	A 2.2	54·05	5·94	3·93		15,250	11,968
,,	A 2.3	54·00	5·99	3·99		14,125	10,772
,,	B 23.1	52·87	5·30	3·64	63·6	13,400	13,739
,,	B 23.2	52·12	5·34	3·68		14,500	14,436
,,	B 23.3	52·50	5·33	3·67		16,250	16,298
,,	P 3.1	52·12	5·16	3·66	62·0	14,375	14,974
,,	P 3.2	51·87	5·03	3·57		16,250	18,271
,,	P 3.3	52·37	5·17	3·65		15,812	16,529
Pine	D 3.1	54·25	6·04	3·87	54·3	11,250	8,954
,,	D 3.2	54·30	5·96	3·90		11,000	8,737
,,	D 3.3	54·15	5·99	3·88		11,000	8,783
,,	C 7.91	54·36	5·93	3·88	33·6	10,000	.....
,,	C 7.92	54·36	5·94	3·91		14,400	11,420
,,	C 7.93	54·24	5·90	3·97		14,000	10,840
Hoop, or Moreton Bay Pine	P 17.1	55·50	5·88	3·83	27·5	8,937	7,577
,, ,,	P 17.2	54·50	5·89	3·89		10,425	8,757
,, ,,	P 17.3	55·00	5·91	3·90		10,000	8,023
Rosewood	D 5.1	54·30	5·87	3·84	74·3	11,750	9,774
,,	D 5.2	54·15	5·88	3·84		12,625	10,484
,,	D 5.3	54·00	5·90	3·85		14,000	11,526
,,	P 16.1	52·62	5·70	3·81	47·3	15,250	13,270
,,	P 16.2	52·12	5·79	3·84		15,750	13,282
,,	P 16.3	52·50	5·72	3·90		15,800	13,075
Coach Wood, or Leather Jacket	B 24.1	52·50	5·68	3·82	36·3	12,750	11,115
,, ,,	B 24.2	52·62	5·82	3·81		11,000	9,375
,, ,,	B 24.3	53·37	5·67	3·81		13,750	12,028
,, ,,	P 14.1	52·50	5·61	3·72	39·6	11,000	10,202
,, ,,	P 14.2	52·37	5·64	3·55		10,500	10,637
,, ,,	P 14.3	52·75	5·64	3·71		10,750	9,970
Black Bean	C 1.1	54·24	6·05	4·10	57·4	16,000	11,325
,,	C 1.2	54·48	6·03	4·02		15,000	11,085
,,	C 1.3	54·36	6·05	4·07		15,500	11,135
Red Bean	C 2.16	54·28	5·87	4·00	46·5	9,000	6,900
,,	C 2.17	54·28	5·91	4·05		7,500	5,571
,,	C 2.18	54·24	5·67	4·02		6,250	4,911
White Beech	P 15.1	52·25	5·87	3·88	49·1	9,875	8,050
,,	P 15.2	52·25	5·85	3·83		8,800	7,383
,,	P 15.3	52·25	5·76	3·81		8,800	7,577
Negro Head, or White Beech	P 18.1	54·37	5·63	3·84	53·6	12,800	11,278
,, ,,	P 18.2	54·37	5·73	3·80		12,187	11,090
,, ,,	P 18.3	54·00	5·72	3·90		14,500	12,421
Red Cedar	P 19.1	54·50	5·87	3·89	28·3	4,425	3,719
,,	P 19.2	54·37	5·89	3·93		4,075	3,292
,,	P 19.3	.....	....	....	....	.....	.....
Australian Teak	F 6.1	57·60	5·92	3·89	62·9	18,000	14,467
,,	F 6.2	57·45	5·94	3·86		19,750	16,067
,,	F 6.3	57·60	5·89	3·87		15,575	12,712

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New South Wales timbers—*continued.*

Modulus of Elasticity in lbs. per Sq. Inch.	No. of Days Seasoning.	Deflection. 2,500 lb.	5,000 lb.	10,000 lb.	12,500 lb.	15,000 lb.	17,500 lb.	20,000 lb.	Remarks.
2,783,692	768	·072	·144	·295	....	·470	....	....	
2,669,684		·075	·150	·295	....	·445	....	....	
2,345,980		·070	·140	·295	....	·495	....	....	
2,340,580	661	·100	·203	·400	....	603	·780	....	
1,881,210		·120	·240	·490	....	·800	....	....	
2,123,020		·110	·220	·445	....	·700	....	....	
1,791,500	631	·122	·250	·520	·700	....	....	....	
2,142,900		·110	·220	·445	·620	....	....	....	
2,037,400		·120	·265	·620	....	....	....	....	
1,757,800	687	·125	·250	·510	....	....	....	....	Full gum vein and split.
2,439,400		·087	·172	·372	....	·642	....	....	Gum veins.
2,259,400		·092	·190	·367	....	·547	....	....	
1,855,800	661	·120	·235	·475	....	·770	....	....	Split along gum vein.
1,733,800		·135	·265	·540	....	....	....	....	Full gum vein and knot.
1,757,335		·120	·235	·470	·580	....	....	....	Gum vein and knot.
1,893,096	51	·088	·176	·370	....	....	....	....	
2,069,161	51	·085	·170	·326	....	·540	·690	....	
1,763,039	54	·100	·200	....	....	....	....	....	
1,684,620	672	·130	·260	·515	·680	....	....	....	
1,626,300		·140	·285	·575	....	....	....	....	
1,672,460		·130	·269	·532	....	....	....	....	
2,240,906	51	·080	·172	·370	....	·570	·690	....	
2,503,372	36	·095	·185	·380	....	·580	·770	....	
2,444,511	36	·080	·172	·350	....	·515	·650	....	
2,379,000	686	·105	·212	·430	·590	....	....	....	Longitudinal crack.
2,830,300		·085	·170	·339	....	·520	·675	....	
2,523,840		·105	·203	·423	....	·673	....	....	
2,273,303	54	·081	·168	·430	·628	....	....	....	
1,783,327		·095	·218	·430	....	·780	....	....	
1,839,943		·090	·210	·400	·620	....	....	....	
2,129,200	689	·127	·257	·512	·672	....	....	....	
1,855,200		·140	·245	·570	·740	....	....	....	
2,018,100		·130	·255	·530	·680	....	....	....	
1,889,100	666	·148	·292	·530	·755	....	....	....	
2,060,300		·150	·295	·590	·780	....	....	....	
1,940,300		·145	·290	·580	....	....	....	....	
2,668,100	55	·063	·148	·460	....	....	....	....	
2,443,844		·075	·160	·500	....	....	....	....	
2,112,857		·080	·187	·500	....	....	....	....	
.....	372	·115	·230	....	....	....	....	....	
2,329,200		·099	·181	·386	....	....	....	....	
1,747,400		·100	·200	·390	·505	....	....	....	
1,420,400	833	·150	....	....	....	....	....	....	
1,507,300		·140	....	....	....	....	....	....	
1,097,200		·180	....	....	....	....	....	....	
2,079,563	54	·096	·200	·470	....	....	....	....	11,500 lb. gave ·6″ deflection.
1,730,002		·117	·248	·505	....	....	....	....	,, ,, ,,
2,002,837		·100	·205	·445	....	....	....	....	12,000 ,, ·555″ ,,
1,725,900	630	·130	·265	·520	·700	....	....	....	
1,659,500		·130	·252	·510	·680	....	....	....	
1,829,700		·125	·250	·505	·630	....	....	....	
1,969,200	649	·160	·310	·650	....	....	....	....	
1,371,600		·143	·308	·643	....	....	....	....	
1,574,400		·140	·278	·577	....	....	....	....	
1,632,800	681	·150	·302	·670	....	....	....	....	Twisted specimen.
1,660,200		·165	·335	·855	....	....	....	....	,, ,,
1,860,500		·132	·263	·702	....	....	....	....	Broke by shearing.
1,594,900	386	·101	·202	·405	·595	·625	....	....	
1,501,700		·125	·240	·475	·585	....	....	....	
1,526,700		·118	·232	·465	....	....	....	....	
1,196,500	386	....	....	....	....	....	....	....	
1,193,600		·154	·311	....	....	....	....	....	
962,140		·217	·427	....	....	....	....	....	
1,453,600	680	·142	·280	·840	....	....	....	....	
1,397,400		·154	·304	....	....	....	....	....	
1,441,700		·154	·310	....	....	....	....	....	
1,476,200	833	·150	....	....	....	....	....	....	
1,676,000		·140	....	....	....	....	....	....	Longitudinal cracks.
1,784,700		·120	....	....	....	....	....	....	
690,710	833	·305	....	....	....	....	....	....	
695,920		·285	....	....	....	....	....	....	
.....	....	....	....	....	....	....	....	....	
2,196,474	..	....	·180	·350	....	·590	....	....	
2,196,913		....	·180	·355	....	·570	....	....	
2,131,237		....	·190	·390	....	·760	....	....	

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TABLE No. 3.—Transverse strength of Victorian, South Australian,

Local Name.	Number and Letter.	Size of Specimen in Inches. Length.	Breadth.	Thickness.	Weight in lbs. per Cubic Foot.	Breaking Load in lbs.	Modulus of Rupture in lbs. per Sq. Inch.
							VICTORIAN
Blue Gum	M 1.1	52·20	5·34	3·54	60·6	12,500	13,449
,,	M 1.2	52·20	5·30	3·54		12,500	13,550
,,	M 1.3	52·00	5·28	3·58		12,000	12,768
Mountain Ash	M 2.1	52·25	5·48	3·71	43·8	14,500	13,841
,, ,,	M 2.2	53·12	5·25	3·59		11,500	12,237
,, ,,	M 2.3	56·62	5·59	3·70		14,300	15,305
Red Gum	M 3.1	52·62	5·80	3·75	65.8	12,500	11,034
,,	M 3.2	52·50	5·90	3·70		11,750	10,236
,,	M 3.3	52·50	5·80	3·74		14,120	12,531
Blackwood	BV 1	54·50	5·74	3·70	43.5	13,100	12,003
,,	BV 2	54·30	5·63	3·75		9,750	8,867
,,	BV 3	53·40	5·68	3·80		12,370	10,859
Mahogany	MV 1	54·10	5·80	3·83	60·4	16,000	13,194
,,	MV 2	54·10	5·82	3·82		14,600	12,347
,,	MV 3	54·00	5·84	3·70		8,850	7,971
							SOUTH AUSTRALIAN
Sugar Gum	SA 1.1	52·50	5·93	2·81	69·6	11,300	9,432
,,	SA 1.2	53·12	5·81	3·75		14,750	12,983
,,	SA 1.3	52 37	5·75	3·75		9,500	8,460
Box Gum	SA 2.1	52·75	5·78	3·68	71·8	14,000	12,848
,,	SA 2.2	49·12	5·81	3·75		16,750	12,884
,,	SA 2.3	56·50	5·34	3·81		16,500	13,393
Blue Gum	SA 3.1	53·50	5·68	3·81	66·4	14,800	12,880
,,	SA 3.2	53·25	5·75	3·87		14,500	12.123
,,	SA 3.3	53·37	5·87	3 81		15,500	13,091
Red Gum	SA 4.1	53·00	5·81	3·81	59·4	9,000	7,672
,,	SA 4.2	52·87	5·93	3·75		10,000	8,624
,,	SA 4.3	52·75	5·90	3·81		4,625	3,880
							WESTERN AUSTRALIAN
Jarrah	MCD 1.1	54·30	5·76	3·94	56·2	14,125	11,374
,,	MCD 1.2	54·20	5·82	3·85		12,060	10,065
,,	MCD 1.3	54·00	5·86	3·80		12,687	10,795
,,	MCD 4.1	54·00	5·62	3·80	67·8	15,775	13,998
,,	MCD 4.2	54·75	5·70	4·11		16,625	12,432
,,	MCD 4.3	54·00	5·78	3·71		14,500	13,123
Red Gum	MCD 2.1	54·25	5·80	3·92	66·2	14,518	11,728
,,	MCD 2.2	54·25	5·80	3·77		16,000	13,975
,,	MCD 2.3	54·20	5·74	3·80		7,500	6,515
Karri	MCD 3.1	54·25	5·84	3·80	59·9	11,622	9,946
,,	MCD 3.2	54·25	5·85	3·78		10,875	9,387
,,	MCD 3.3	54·20	5·84	3·86		13,500	11,117
*Jarrah	No. 1 A	54·12	5·75	3·70	63·28	12,111	12,491
*Karri	D 5 K	54·12	6 00	4·00	68·33	17,116	14,383
							QUEENSLAND
Ironbark	A 1	58·00	5·61	3·61	73·9	15,750	15,511
,,	A 2	55·75	5·84	3 74		18,125	15,975
,,	A 3	54·75	5·62	3·73		15,325	14,111
Spotted Gum	C 1	54·87	5·74	3·74	71·9	17,875	16,030
,, ,,	C 2	54·87	5·80	3·72		19,575	17,560
,, ,,	C 3	54·50	5·80	3·73		19,375	17,287
Tallow wood	D 1	53·37	5·74	3·74	71·1	12,812	11,489
,,	D 2	53·50	5·80	3·74		13,075	11,604
,,	D 3	53·87	5·80	3·74		11,050	9,807
Blood wood	F 1	55·50	4·63	3·22	56·5	5,750	8,624
,,	F 2	54·87	5·61	3·22		7,625	9,438
Turpentine	G 1	53·62	5·80	3·73	70·6	23,000	20,527
,,	G 2	53·62	5·63	3·61		21,187	21,463
,,	G 3	53·75	5·63	3·60		16,225	16,011

* Tested as a check on specimens MCD.

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Western Australian, and Queensland timbers.

Modulus of Elasticity in lbs. per Square Inch.	No. of days Seasoning.	Deflection. 2,500 lb.	5,000 lb.	10,000 lb.	12,500 lb.	15,000 lb.	17,500 lb.	20,000 lb.	Remarks.
TIMBERS.									
1,716,345	369	·155	·340	·475	·678	....	....	....	
1,896,645		·150	·310	·440	·605	....	....	....	
1,630,358		·180	·350	·515	·700	....	....	....	
2,058,340	315	·113	·240	·340	·460	....	....	....	
1,897,100		·150	·300	·448	·664	....	....	....	
2,122,700		·110	·230	·330	·445	....	....	....	
1,329,300	160	·170	·340	·500	·648	....	....	....	Split before testing.
1,321,626		·175	·350	·535	·730	....	....	....	
1,469,700		·155	·310	·445	·660	....	....	....	
1,434,700	471	·165	·330	·490	....	....	....	....	
1,258,430		·180	·370	·550	....	....	....	....	
1,167,215		·195	·380	·550	....	....	....	....	
1,854,800	471	·110	·220	·340	·450	·580	....	....	
1,775,560		·120	·240	·356	·475	....	....	....	Knot in specimen.
881,740		·220	·530	·800	....	....	....	....	
TIMBERS.									
.....	691	....	....	....	....	....	....	....	
2,022,600		·120	·223	·340	·459	·620	....	...	
1,232,300		·178	·370	·640	....	....	....	....	
2,030,200	727	·120	·235	·361	·486	·645	....	....	
2,819,000	362	·080	·160	·251	·340	·440	·540	....	
2,800,100	727	·085	·165	·255	·354	·465	·605	....	
1,994,600	817	·126	·220	·349	·470	....	....	....	
2,025,400	817	·110	·204	·325	·500	....	....	....	
1,774,000	730	·135	·240	·373	·510	·680	....	....	
810,610	697	·280	·530	....	....	....	....	....	
958,460		·300	·580	....	....	....	....	....	
918,590		·230	....	....	....	....	....	...	
TIMBERS.									
1,307,990	388	·150	·315	·478	·660	....	....	....	
1,261,211		·165	·298	·430	·590	....	....	....	
1,333,125		·165	·325	·495	·670	...	....	....	
1,949,027	474	·115	·220	·338	·460	·655	....	....	
1,746,640		·110	·190	·285	·385	·502	·647	....	
2,129,833		·100	·225	·342	·467	....	....	....	
1,884,210	388	·105	·208	·304	·418	·540	....	....	Resembling jarrah, both in appearance and weight.
2,341,145		·095	·180	·270	·365	....	....	....	
912,283		·240	.468	·750	....	....	....	....	Like Red Gum of N.S.W and Victoria.
1,725,560	346	·125	·250	·378	·570	....	....	. ..	
1,750,100		·125	·250	·335	·650	....	....	....	
1,646,318		·125	·230	·345	·490	....	....	....	
2,308,200	202	....	....	....	....	....	....	....	Good sound timber.
2,889,980	....	....	....	....	....	....	....	....	" " "
TIMBERS.									
2,238,400	248	·118	·238	·478	·618	·793	....	....	
2,318,500		·095	·188	·378	·475	·560	·760	....	
2,369,600		·099	·195	·410	·545	·745	....	....	
2,557,600	460	·086	·170	·345	·435	·540	·710	....	Cracked longitudinally.
2,572,200		·090	·183	·360	·483	·553	·713	....	
2,417,200		·091	·184	·366	·465	·598	·760	....	
1,648,000	338	·140	·280	·598	....	....	....	....	
1,627,200		·140	·240	·530	....	....	....	....	
1,518,700		·153	·300	·595	....	....	....	....	Sheared from worm-hole slightly worm-eaten.
1,375,800	460	·325	....	....	....	....	....	....	Bad specimen; worm eaten and gum veins
1,054,400		·352	·660	....	....	....	....	....	Slight gum veins, &c.
2,870,500	279	·076	·151	·306	·392	·486	·596	·800	
2,899,600		·089	·172	·337	·412	·512	·672	....	
2,631,400		·100	·195	·385	·485	·585	....	....	

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TABLE No. 4.—Compressive strength

Local Name.	Number and Letter.	Size of Specimen in Inches. Length.	Breadth.	Thickness.	Area in Square Inches.	Total breaking Load in lbs.	Breaking Load in lbs. per Sq. Inch.
Red Ironbark	B 2.1	12·00	3·00	3·00	9·000	86,400	9,600
,,	B 2.2	11·90	3·06	3·03	9·272	83,100	8,963
,,	B 16.1	11·87	2·84	2·81	7·980	97,250	12,186
,,	B 16.2	11·87	2·81	2·81	7·201	90,750	12,429
,,	P 4.1	11·50	3·00	2·91	8·730	100,000	11,454
,,	P 4.2	11·75	2·82	2·82	7·954	100,000	12,572
Grey Ironbark	B 1.1	11·80	3·10	3·03	9·393	99,200	10,558
,,	B 1.2	11·90	3·09	3·08	9·527	93,000	9,772
,,	B 17.1	12·00	2·91	2·90	8·439	77,250	9,154
,,	B 17.2	11·87	2·80	2·82	7·896	90,200	11,423
White Ironbark	D 1.1	11·40	2·85	2·84	8·094	74,700	9,229
,,	D 1.2	11·40	2·79	2·79	7·784	63,300	8,132
,,	P 5.1	11·62	2·83	2·92	8·263	90,000	10,892
,,	P 5.2	11·75	2·92	2·94	8·585	100,000	11,648
Tallowwood	F 3.1	12·00	3·00	3·02	9·060	66,500	7,340
,,	F 3.2	12·00	2·98	3·00	8·940	70,000	7,830
,,	P 2.1	11·87	2·80	2·80	9·022	78,000	8,645
,,	P 2.2	11·50	2·63	2·73	7·179	74,500	10,376
Blackbutt	F 1.1	12·00	2·97	3·00	8·910	66,000	7,407
,,	F 1.2	12·00	2·98	3·00	8·940	67,400	7,539
,,	B 4.1	11·90	3·14	3·10	9·734	75,600	7,757
,,	B 4.2	11·80	3·17	3·00	9·510	69,200	7,276
,,	B 22.1	12·00	2·93	2·91	8·526	79,500	9,324
,,	B 22.2	11·87	2·92	2·90	8·468	77,700	9,176
,,	P 1.1	11·75	2·83	2·82	7·986	80,500	10,087
,,	P 1.2	11·87	3·00	3·02	9·060	93,500	10,320
Spotted Gum	B 3.1	11·90	3·13	2·93	9·171	60,500	6,597
,,	B 3.2	11·90	3·06	2·98	9·118	63,000	6,909
,,	C 4.55	11·99	2·98	3·02	8·848	90,000	10,171
,,	C 4.56	12·01	2·65	2·94	7·791	84,000	10,781
,,	B 14.1	12·66	2·81	2·83	7·976	69,000	8,676
,,	B 14.2	11·87	2·81	2·92	8·205	66,750	8,135
Red Gum	3 M.1	12·80	3·03	3·00	9·090	45,400	4,994
,,	3 M.2	12·70	3·00	2·99	8·970	45,200	5,039
,,	B 11.1	12·00	2·80	2·84	7·952	77,250	9,714
,,	B 11.2	12·18	2·80	2·82	7·896	78,750	9,973
,,	C 6.85	12·01	2·82	2·94	8·291	76,000	9,167
,,	C 6.86	12·12	2·92	2·98	8·701	76,000	8,735
Flooded Gum	A 3.1	11·90	2·98	3·03	9·029	52,500	5,814
,,	A 3.2	12·06	2·97	3·02	8·969	53,500	5,964
,,	F 5.1	12·00	2·98	3·02	9·000	77,700	8,633
,,	F 5.2	12·00	3·00	3·00	9·000	80,000	8,889
,,	P 8.1	11·33	2·70	2·63	7·101	64,750	9,118
,,	P 8.2	11·62	2·93	2·80	8·204	83,000	10,117
Grey Gum	F 4.1	12·00	3·00	2·98	8·940	67,000	7,495
,,	F 4.2	12·00	3·00	2·98	8·940	62,500	6,991
,,	P 7.1	11·75	2·84	2·81	7·980	83,000	10,400
,,	P 7.2	11·80	3·10	3·01	9·330	86,250	9,244
Grey Gum, or Mountain Gum	J 1	12·00	2·74	2·80	7·472	47,850	6,397
,, ,,	J 2	12·00	2·80	2·73	7·644	51,000	6,755
Ribbon Gum	K 1	12.00	2·94	2·83	8·320	51,650	6,130
,,	K 2	12.00	2·90	2·82	8·178	41,000	5,013
Mountain Gum	B 19.1	12·18	2·62	2·81	7·195	57,000	7,923
,,	B 19.2	11·93	2·74	2·72	7·453	59,300	7,957
Woollybutt	B 5.1	11·90	3 07	3·04	9·332	65,600	7,029
,,	B 5.2	11·90	3·07	3·11	9·547	66,200	6,934
,,	B 15.1	12·00	2·82	2·72	7·670	55,250	7,203
,,	B 15.2	11·81	3·01	2·91	8·760	65,750	7,506
Mahogany	F 2.1	12·00	2·95	3·00	8 850	60,000	6,779
,,	F 2.2	11·90	2·92	2·99	8·730	72,000	8,247
Forest Mahogany	D 4.1	11·50	2·83	2·82	7·981	54,100	6,779
,,	D 4.2	11·60	2·83	2·81	7·952	72,800	9,155
,,	P 11.1	11·75	2·73	2·82	7·698	77,750	10,090
,,	P 11.2	11·62	2·82	2·80	7·896	77,750	9,815
Swamp Mahogany	B 6.1	12·40	2·96	2·93	8·672	56,000	6,457
,,	B 6.2	12·80	2·97	2·95	8·761	63,400	7,236
,,	B 10.1	11·75	2 84	2·90	8·236	61,000	7,407
,,	B 10.2	11·81	2·80	2·81	7·868	51,750	6,577
,,	P 12.1	12·00	2 81	2·83	7·952	45,000	5,686
,,	P 12.2	11·50	2·91	2·92	8·497	49,700	5,849

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of New South Wales timbers.

Modulus of Elasticity in lbs. per Sq. Inch.	Number of Days Seasoning.	Compressions in Inches.									Remarks.
		10,000 lb.	20,000 lb.	30,000 lb.	40,000 lb.	50,000 lb.	60,000 lb.	70,000 lb.	80,000 lb.	90,000 lb.	
2,686,666	159.	·005	·010	·015	·022	·030	·039	..	..	..	
1,092,802	142	·010	·023	·032	·040	·050	·062	..	..	..	
2,976,000	848	·005	·010	·015	·021	·028	·033	·040	·048	·067	
2,355,700		·007	·014	·022	·031	·038	·047	·054	·067	·107	
1,646,650	832	·008	·016	·024	·033	·043	·048	·056	·064	·075	Stood three minutes before breaking.
2,462,000		·006	·012	·019	·025	·031	·038	·044	·057	·061	
1,083,732	218	..	..	..	..	..	..	..	..	..	
.....		..	..	..	..	..	..	..	..	..	
1,422,000	848	·009	·018	·025	·033	·040	·052	·064	..	..	
1,671,300		·009	·015	·023	·030	·037	·044	·051	·062	·085	
1,760,564	21	·008	·016	·024	·035	·046	·060	..	..	..	
1,464,524		·010	·020	·030	·036	·043	·053	..	..	..	
1,563,100	833	008	·016	·023	·030	·036	·043	·050	·060	·086	
2,737,400		·006	·012	·019	·024	·031	·039	·046	·051	·061	
1,762,281	310	·010	·016	·022	·028	·039	·045	..	..	..	
1,564,122	311	.010	·019	·027	·034	·043	·051	·075	..	..	
1,644,540	832	·008	·013	·021	·029	·037	·045	·056	..	..	
1,685,990		·009	·017	·021	·030	·039	·050	·060	..	..	
1,503,906	307	·007	.018	·022	·030	·039	·063	..	.	..	
1,565,973		·007	·017	·023	·033	·044	·055	..	..	..	
1,697,943	261	·008	·018	·023	·033	·040	·047	..	..	..	
1,771,353		·006	·017	·025	·033	·040	·050	..	..	..	
2,010,600	855	·007	·015	·022	·030	·039	·047	·057	·075	..	
1,558,200		·009	·018	·028	·038	.049	·060	·073	·105	..	
1,472,320	830	·010	·020	·028	·033	·042	·050	·060	..	..	Broke at screw hole.
1,455,700		·009	·017	·022	029	·035	·041	·049	·056	·065	
2,616,944	351	·008	·010	·018	·026	·043	·070	..	..	..	
1,023,920		·013	·025	·036	·047	.060	·075	..	..	..	
.....	538	·001	·007	·012	·022	·030	..	..	..	..	
2,569,200		·004	·012	·019	·028	·035	..	..	..	..	
1,769,230	848	·009	·016	·025	·034	·043	·055	·085	..	..	
1,112,600		·013	·023	·034	·044	·056	·075	..	..	..	
596,870	79	·025	·045	·070	·115	...	..	..	..	..	
566,332		·025	·050	·080	·122	..	..	..	.	..	
1,676,765	849	·009	·015	·022	·029	·037	·047	·058	..	..	
1,929,370		·008	·015	·023	·031	·040	·047	·060	·102	..	
1,326,900	538	·010	·022	·032	·043	·050	..	..	..	..	
1,741,500		·008	·016	·025	·038	·049	..	..	..	..	
1,317,829	82	·010	·020	·031	·042	·066	..	..	..	..	
1,348,941		·010	·020	·030	·043	·068	..	..	..	..	
1,785,140	342	·007	·015	·021	·029	·033	·045	·066	..	..	
1,774,029		·007	·016	·021	·029	·038	·045	·048	..	..	
1,329,600	830	·011	·023	·034	·044	·055	·073	..	..	..	
1,416,400		·010	·018	·023	·030	·040	·050	·060	·080	..	
2,006,040	343										
1,554,019		·009	·018	·027	·032	·040	·052	..	..	..	
1,639,725	833	·006	·012	·021	·030	·040	·049	·061	·084	..	
2,107,700		·006	012	·019	·024	·032	·042	·052	·070	..	
1,534,900	250	·012	·023	·034	·053	..	..	..	..	..	Sound timber, but rather green.
1,569,900		·010	·020	·030	·045	·105	..	..	..	..	
1,442,300	250	·010	·022	·034	·050	·086	..	..	..	..	
1,048,100		·014	·028	·046	·096	..	..	..	..	..	Gum veins and longitudinal cracks.
1,540,000	844	·011	·022	·032	·043	·061	·112	..	..	..	
1,456,190		·011	·022	·031	·041	·057	·103	..	..	..	
1,329,621	261	·011	·017	·026	·037	·053	·073	..	..	..	
1,299,694		011	·017	·029	·044	·065	·075	..	..	..	
1,422,300	848	·011	·023	·034	·047	·075	..	..	..	..	
1,348,600		·010	.020	·030	·040	·050	·063	..	..	..	
1,581,898	341	·011	·018	·025	·033	·044	·055	..	..	..	
1,594,422		·010	·018	·025	·033	·044	·055	..	..	..	
.....	32	·007	·013	·024	·034	·051	..	..	..	..	
.....		·010	·018	·029	·038	·050	..	..	..	..	
1,526,250	826	·010	·022	·030	·04	·049	·057	·070	..	..	
1,338,425		·011	·022	·032	·037	·046	·051	·062	..	..	
1,846,154	29	·007	..	·022	·033	·047	..	..	..	..	
.....		·004	·008	·012	·022	·030	·047	..	..	.	
1,585,170	849	·009	·018	·027	·037	·051	·084	..	..	..	
1,251,100		·012	·024	·040	·055	·082	..	..	..	..	
.....	835	·031	·059	·088	·123	..	..	..	..	..	
1,978,500		·007	·015	·021	·031	·056	..	..	..	..	

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TABLE No. 4.—Compressive strength

Local Name.	Number and letter.	Size of Specimen in Inches			Area in Square Inches.	Total Breaking Load in lbs.	Breaking Load in lbs. per Sq. Inch.
		Length.	Breadth.	Thickness.			
Mountain Ash	B 7.1	11·20	2·84	2·80	7·952	42,100	5,294
,,	B 7.2	11·00	2·86	2·84	8 122	53,800	6,624
,,	C 3.40	11·98	3·13	3·02	9·452	72,500	7,671
,,	C 3.41	11·99	3·17	3·13	9·922	78,000	7,861
,,	B 18.1	11·90	2·54	2·72	6·908	59,500	8,612
,,	B 18.2	12·00	2·74	2.52	6·905	57,700	8,357
Stringy Bark	A 4.1	11·50	3·04	3·02	9·181	57,000	6,209
,,	A 4.2	11·80	2 98	3·00	8·940	51,500	5.761
,,	C 5.70	12·04	2 83	2·88	8·150	69,000	8,466
,,	C 5.71	12·07	2·81	2 93	8·233	66,000	8,017
,,	B 12.1	12·00	2·91	2·93	8·526	80,750	9,471
,,	B 12.2	11·94	2·93	2·92	8·556	72,000	8,416
Smooth-top Stringy Bark	I 1	12·00	3·03	2·81	8·514	51,250	6,019
,, ,,	I 2	11·75	3·01	2·82	8·488	45,650	5,378
Stringy Bark, or Victorian Messmate	S 1	12·00	2·92	2·83	8·264	36,850	4,460
,, ,, ,,	S 2	12·00	2·92	2·84	8·293	39,700	4,787
Messmate	B 20.1	12·68	2·64	2·70	7·128	69,000	9,680
,,	B 20.2	12·66	2·63	2·64	6·943	64,300	9,260
,,	P 6.1	11·55	2·73	2·80	7·644	79,250	10,320
,,	P 6.2	11·44	2·93	2·84	8·314	72,000	6,889
Grey Box	D 2.1	11·60	2·84	2·83	8·037	68,200	8,486
,,	D 2.2	11·50	2·84	2·81	7·980	60,300	7,556
Brush or White Box	B 9.1	12·31	2·81	2·82	7·924	71,250	8,991
,,	B 9.2	12·12	2·91	2 81	8·177	83,000	10,151
,,	P 10.1	11·87	2·82	2·81	7·924	54,500	6,878
,,	P 10.2	11 95	2·82	2·81	7·924	57,750	7,288
Bloodwood	B 13.1	12·66	2·84	2·82	8·008	75,000	9,365
,,	B 13.2	12·13	2·92	2·90	8·468	76,750	9,064
,,	P 9.1	11·62	2·92	2·92	8·526	100,000	11,728
,,	P 9.2	11·42	2·91	2·92	8·497	89,250	10,504
Blackwood	B 8.1	11·20	3·14	3·07	9·640	67,300	6,981
,,	B 8.2	11·80	3·13	3·08	9·640	63,500	6,587
,,	B 21.1	11·87	2·92	2·92	8·526	58,500	6,861
,,	B 21.2	12·00	2.94	3·03	8·908	74,000	8,307
Forest Oak	A 1 1	11·80	3·00	3·03	9·090	86,000	9,461
,,	A 1.2	11·80	3·01	3·00	9·030	74,500	8,250
,,	P 13.1	11·87	2·70	2·54	6·858	70,000	10,207
,,	P 13.2	11·87	2·80	2·64	7·392	75,750	10,247
Turpentine	A 2.1	11·80	2·98	2·92	8·702	56,000	6,437
,,	A 2.2	11·70	3·02	3·00	9·060	57,000	6,291
,,	B 23.1	11·94	2·72	2·64	7·180	75,250	10,479
,,	B 23.2	11·94	2·74	2·73	7·480	69,500	9,291
,,	P 3.1	11·87	2·62	2·62	6·864	65,750	9,578
,,	P 3.2	11·50	2·63	2·64	6·943	61,750	8,894
Pine	D 3.1	11·30	2·83	2·82	7·981	34,600	4,336
,,	D 3.2	11·30	2·82	2·82	7·952	32,300	4,062
,,	C 7.100	12·10	2·97	2·99	8·880	47,000	5,289
,,	C 7.101	12·10	2·98	2·99	8·991	44,500	4,994
Hoop, or Moreton Bay Pine	P 17.1	12·00	2·93	2·94	8·628	45,500	5,285
,, ,,	P 17.2	12·10	3·03	3·03	9·180	48,500	5,282
Rosewood	D 5.1	11·40	2·83	2·82	7·981	44,700	5,601
,,	D 5.2	11.40	2·85	2·83	8·065	51,800	6,422
,,	P 16.1	12·00	2·81	2·80	7·868	56,200	7,143
,,	P 16.2	11·68	2·83	2·83	7·995	64,200	8,030
Coachwood, or Leather Jacket	B 24.1	11·75	2·74	2·80	7·672	41,250	5,377
,,	B 24.2	11·87	2·91	3·00	8·730	48,800	5,590
,,	P 14.1	11·75	2·84	2·72	7.725	50,750	6,570
,,	P 14.2	11·75	2·90	2·73	7·917	46,250	5,842
Black Bean	C 1.10	12·05	2·98	2·78	8·284	60,500	7,303
,,	C 1.11	12·02	2·90	2.98	8·542	63,000	7,375
Red Bean	C 2.25	12·00	3·01	3·02	9·090	50,500	5,555
,,	C 2.26	12·07	3·02	2.88	8·698	46,000	5,288
White Beach	P 15.1	11·68	2·91	3·04	8·846	47,250	5,342
,,	P 15.2	11·75	2·91	3·03	8·817	44,500	5,047
Beech, or Negro Head	P 18.1	12·87	2·90	2·80	8·120	44,000	5,418
,,	P 18.2	12·75	2·93	2·81	8·233	44,750	5,435
Red Cedar	P 19.1	11·87	2·93	3·00	8·790	22,750	2,588
,,	P 19.2	11·75	2·93	3·00	8·790	28,500	3,242
Teak	F 6.1.	12·00	2·96	2·96	8·760	60,000	6,849
,,	F 6.2	12·00	2·90	2·94	8·530	61,500	7,210

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of New South Wales timbers—*continued.*

Modulus of Elasticity in lbs. per Sq. Inch.	Number of Days Seasoning.	Compressions in Inches. 10,000 lb.	20,000 lb.	30,000 lb.	40,000 lb.	50,000 lb.	60,000 lb.	70,000 lb.	80,000 lb.	90,000 lb.	Remarks.
1,026,995	34	·016	·024	·040	·060	..	..	..	..	..	
1,692,307		·010	·018	·026	·035	·041	..	..	..	..	
1,334,200	552	·010	·019	·026	·035	·043	..	..	..	..	
1,726,400		·008	·014	·024	·031	·040	..	..	..	.	
1,722,400	844	·010	·020	·031	·042	·057	·102	..	..	..	
1,158,600		·015	·030	·041	·056	·073	·110	..	..	..	
1,148,309	80	·016	·029	·045	·061	·075	·098	..	..	..	
1,319,910		·016	·029	·045	·061	·076	·100	..	..	..	
1,477,300	538	·010	·020	·030	·042	·055	..	..	..	..	
1,172,900		·011	·025	·037	·048	·060	..	..	..	..	
1,563,790	842	·009	·015	·022	·029	·039	·048	·057	·079	..	
1,268,560		·011	021	·030	·041	·050	·060	·075	..	..	
1,409,300	250	·011	·021	·031	·042	·065	..	..	..	..	
1,384,300		·010	·019	·027	·041	..	..	..	..	..	
854,170	250	·016	·030	·050	..	..	..	..	..	..	
1,205,800		·012	·021	·036	·078	..	..	..	..	..	
.....	344	·004	·007	·011	·014	·018	·023	·027	..	..	
1,402,810		·013	·024	·036	·047	·060	·080	·091	..	..	
1,511,000	827	·009	·018	·025	·034	·042	·053	·064	..	..	
1,378,000		·008	·016	·024	·032	·040	·051	·071	..	..	
2,415,860	748	·011	·012	·018	·024	·032	·046	·075	..	..	
1,091,065		·014	·025	·035	·045	·056	·075	..	..	..	
1,553,772	842	·010	·020	·029	·037	·047	·060	·087	..	..	
1,853,500		·008	·016	·025	·035	·043	·052	·062	·086	..	
1,647,800	835	·010	·020	·030	·048	·064	..	..	..	..	
1,160,000		·013	·024	·034	·049	·074	..	..	..	.	
1,581,100	841	·010	·018	·027	·037	·047	·058	·073	..	..	
1,431,900		·010	·017	·024	·033	·043	·053	·071	..	..	
1,704,300	835	·006	·012	·018	·025	·032	·038	·046	·052	·059	
1,678,000		·009	·015	·023	·033	·042	·05	·059	·068	..	
1,936,332	28	·010	·012	·022	·028	·034	·045	..	..	..	
1,224,066		·010	·020	·033	·041	·053	·066	..	..	..	
	844	·018	·033	·049	·065	·084	·139	..	..	..	
1,347,100		·010	·021	·031	·042	·056	·069	·089	·105	..	
2,379,861	79	·006	·013	·017	.022	·033	·042	..	..	..	
1,633,379	64	·010	·017	·025	·034	·042	·052	..	..	..	
1,574,140	837	·010	·018	·028	·039	·050	·062	·090	..	..	
2,008,100		·008	·013	·021	·028	·037	·044	.055	..	..	
1,582,353	82	·010	·020	·030	·040	·060	..	..	..	..	
1,506,601		·008	·018	·026	·038	·053	..	..	..	..	
1,662,400	855	·010	·018	·028	·038	·048	·059	·076	.110	..	
1,595,900		·010	·023	·035	·049	·062	·080	·135	..	..	
1,572,300	830	·011	·019	·030	·044	·056	·075	..	..	..	
1,656,300		·011	·021	·029	·037	·050	·071	..	..	..	
1,415,933	33	·010	·020	·040	·077	..	..	..	..	..	
947,305		·015	·030	·061	·085	..	..	..	..	..	
908,408	538	·015	·030	·045	·066	..	..	..	..	..	
905,350		·015	·030	·043	·063	..	..	..	..	..	
772,615	858	·018	·033	·053	·073	..	..	..	..	..	
775,270		·016	·032	·052	·074	·110	..	..	..	..	
884,287	34	·015	·035	·050	·070	..	..	..	..	..	
1,405,387		·009	·018	·032	·040	·060	..	..	..	..	
1,127,100	826	·014	·026	·037	·047	·068	..	..	..	..	
1,218,500		·012	·020	·033	·045	·057	·077	..	..	..	
1,171,900	815	·013	·029	·045	·076	..	..	..	..	..	
1,244,100		·012	·024	·035	·050	·094	..	..	..	..	
1,267,500	827	·009	·019	·030	·045	·075	..	..	..	..	
1,236,800		·012	·024	·037	·050	..	..	..	..	..	
	552	·006	·014	·025	·035	·050	..	..	..	..	
1,536,515		·010	·018	·029	·039	·052	..	..	..	..	
1,100,100	552	·014	·024	·039	·059	·097	..	..	..	..	
676,915		·020	·041	·056	·083	..	..	..	..	..	
1,467,900	826	·009	·017	·028	·038	..	..	..	..	..	
1,903,800		·006	·011	·018	·025	..	..	..	..	..	
1,321,325	858	·012	·023	·035	·053	..	..	..	..	..	
1,720,700		·009	017	·027	·045	..	..	..	..	..	
	858	·038	.077	..	..	..	..	..	..	..	
786,330		·017	·032	..	..	..	..	..	..	..	
1,599,216	..	·008	·018	·026	·040	·050	·090	..	..	..	
1,872,559		·008	·018	·026	·036	·045	·064	..	..	..	

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TABLE No. 4.—Compressive strength of Victorian, South Australian,

Local Name.	Number and Letter.	Size of Specimen in Inches.			Area in Square Inches.	Total Breaking Load in lbs.	Breaking Load in lbs. per Square Inch.
		Length.	Breadth.	Thickness.			
VICTORIAN							
Blue Gum	M 1.1	12·00	2·52	2·71	6·825	60,500	8,864
,,	M 1.2	11·87	2·50	2·62	6·550	59,750	9,122
Mountain Ash	M 2.1	16·00	2·80	2·90	8·112	59,250	7,296
,,	M 2.2	16·00	2·73	2·60	7·098	55,750	7,854
Red Gum	M 3.1	11·75	2·80	2·80	7·858	50,500	8,089
,,	M 3.2	11·33	2·81	2·82	7·925	56,000	7,067
Blackwood	BV 1	12·00	2·82	2·80	7·896	52,000	6,585
,,	BV 2	12·10	2·80	2·90	8·112	49,250	6,065
Mahogany	MV 1	12·00	2·82	2·81	7·925	61,500	7,761
,,	MV 2	12·00	2·52	2·71	7·432	62,750	8,435
SOUTH AUSTRALIAN							
Sugar Gum	SA 1.1	11·62	3·00	2·94	8·811	61,500	6,979
,,	SA 1,2	11·93	3·00	2·94	8·811	53,500	6,071
Box	SA 2.1	11·75	2·60	2·83	8·505	74,000	8,605
,,	SA 2.2	11·63	3·03	2·94	8·993	70,000	7,784
Blue Gum	SA 3.1	11·93	2·93	2 87	8·443	51,500	6,080
,,	SA 3.2	11·62	2·93	2·87	8·443	74,000	8,764
Red Gum	SA 4.1	11·87	3·03	3·00	9·093	43,000	4,728
,,	SA 4 2	11·75	3·03	2·94	8·902	46,500	5,223
WESTERN AUSTRALIAN							
Jarrah	MCD 1.1	12·00	2·83	2·73	7·725	45,500	5,889
,,	MCD 1.2	12·13	2·71	2·74	7·420	44,750	6,030
,,	MCD 4.1	12·75	2·80	2·81	7·854	62,000	7,880
,,	MCD 4.2	12·50	2·74	2·74	7·507	56,000	7,559
Red Gum	MCD 2.1	12·00	2·73	2·80	7·644	47,200	6,174
,,	MCD 2.2	12·00	2·81	2·82	7·925	45,000	5,679
Karri	MCD 3.1	12·25	2·70	2·72	7·359	46,000	6,251
,,	MCD 3.2	12·25	2·82	2·81	7·925	63,500	8,013
Jarrah	No. 2 B	12·22	2·71	2·71	7·344	46,825	6,826
Karri	D 4 K	12·98	3·06	3·00	9·180	49,175	5,420
QUEENSLAND							
Ironbark	A 1	11·87	2·72	2·70	7·344	64,500	8,783
,,	A 2	11·82	2·72	2·70	7·344	63,000	8,484
Spotted Gum	C 1	11·87	2·54	2·70	6·858	74,250	10,829
,,	C 2	11·75	2·70	2·54	6·858	74,750	10,903
Tallowwood	D 1	12·00	2·70	2·60	7·020	52,250	7,439
,,	D 2	12·00	2·70	2·60	7·020	52,700	7,507
Bloodwood	F 1	12·00	2·71	2·44	6·612	31,600	4,779
,,	F 2	12·00	2·71	2·44	6·612	36,300	5,490
Turpentine	G 1	11·87	2·72	2·71	7·371	72,250	9,801
,,	G 2	11·96	2·71	2·72	7·371	73,200	9,929

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Western Australian, and Queensland timbers.

Modulus of Elasticity in lbs. per Square Inch.	Number of Days Seasoning.	Compressions in Inches.									Remarks
		10,000 lb.	20,000 lb.	30,000 lb.	40,000 lb.	50,000 lb.	60,000 lb.	70,000 lb.	80,000 lb.	90,000 lb.	
TIMBERS.											
1,758,200	558	·010	·016	·028	·038	·050	·070	..	..	..	
1,812,200		·011	·022	·032	·041	·052	·068	..	..	..	
....	504	·004	·008	·013	·017	·022	·027	..	..	..	
....		·004	·007	·013	·016	·023	..	..	..	..	
830,710	490	·018	·036	·052	·072	·148	..	..	..	..	
1,191,500		·012	·020	·031	·044	·061	..	..	..	..	
949,850	660	·016	·036	·053	·072	·116	..	..	..	..	Broke at screw-hole.
876,560		·017	·031	·049	·068	·118	..	..	..	..	
946,465	656	·015	·030	·043	·058	·071	·099	..	..	..	
1,008,190	660	·018	·035	·051	·068	·087	·125	..	..	..	
TIMBERS.											
1,014,902	685	·018	·026	·037	·051	·070	.103	..	..	..	
1,003,543		·012	·027	·037	·052	·075	..	..	..	..	
1,023,363	720	·013	·027	·038	·048	·082	.102	..	..	..	
1,181,575		·010	·022	·032	·042	·054	·070	·105	..	..	
1,256,220	811	·010	·020	·035	·049	·070	..	..	..	..	
1,101,504		·012	·025	·039	·051	·065	·082	·115	..	..	
637,048	690	·026	·050	·077	·130	..	..	..	..	..	
642,223		·022	·045	·070	·103	..	..	..	..	..	
TIMBERS.											
776,610	575	·020	·040	·059	·086	..	..	..	..	..	
817,310		·020	·039	·062	·097	..	..	..	..	..	
....	661	·004	·010	·018	·023	.030	·042	..	..	..	
979,395		·017	·031	·050	·066	·087	..	..	..	..	
784,930	575	·020	·035	·050	·070	..	..	..	..	..	
606,830		·028	·054	·080	·110	..	..	..	..	..	
756,620	533	·022	·043	·062	·120	..	..	..	..	..	
1,106,760		·014	·022	·033	·046	·062	·090	..	..	..	
921,930	203	..	..	..	..	..	..	..	..	..	Tested as a check on specimens M.C.D.
1,135,056	..	..	..	..	..	..	..	..	..	..	
TIMBERS.											
1,243,800	221	·013	·026	·040	.057	·070	·095	..	..	..	
1,610,400		·010	·020	·032	·044	·060	·105	..	..	..	
1,919,500	434	·009	·020	·030	·040	·050	·061	·084	..	.	
1,713,300		·010	·020	·031	·041	·053	·066	·089	..	..	
1,266,230	309	·013	·029	·044	·058	·084	..	..	..	..	
1,899,300		·009	·017	·027	·041	·078	..	..	..	..	
625,784	434	·029	·059	·099	..	..	..	..	..	..	
834,896		·022	·047	·082	..	..	..	..	..	..	
1,464,600	252	·011	·025	·037	·047	·057	·070	·094	..	..	
1,476,100		·011	·024	·037	·049	·060	·072	·098	..	..	

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TABLE No. 5.—Compressive strength

Local Name.	Number and Letter.	Size of Specimen in Inches. Length.	Breadth.	Thickness.	Area in Square Inches.	Total Breaking Load in lbs.	Breaking Load in lbs. per Sq. Inch.
Red Ironbark	B 2.1	24·00	3·03	3·05	9·241	85,800	9,284
,,	B 2.2	24·00	3·03	3·05	9·241	88,000	9,522
,,	B 16.1	23·62	2 91	2 84	8·264	82,600	9,994
,,	B 16.2	23·68	2·74	2·91	7·987	86,500	10,830
,,	P 4.1	23·43	2·91	3·03	8·788	100,000	11,379
,,	P 4.2	23·50	2 82	2·90	8·192	87,800	10,717
Black Ironbark	L 2.1	23·75	3·03	3 00	9·090	69,500	7,646
,,	L 2.2	23·25	3·00	3·00	9·000	69,400	7,711
Grey Ironbark	B 1.1	24·00	3·10	3·00	9·300	75,000	8,064
,,	B 1.2	24·00	3·06	3·03	9·271	94,200	10,160
,,	B 17.1	23·31	2·84	2·84	8·066	83,750	10,383
,,	B 17.2	23·31	2·84	2·91	8·264	93,250	11,283
White Ironbark	D 1.1	23·50	2·87	2·81	8·264	66,500	8,047
,,	D 1.2	23·40	2·85	2·84	8·094	66,400	8,204
,,	P 5.1	23·12	2·90	2·94	8·526	97,500	11,435
,,	P 5.2	23·66	2·73	2·81	7·671	88,750	11,569
Tallowwood	F 3.1	24·00	2·90	2·96	8·584	59,000	6,876
,,	F 3 2	24·00	2·94	2 97	8·732	51,250	5,870
,,	P 2.1	23·50	2·64	3·02	7·972	88,750	11,131
,,	P 2.2	23·43	2·83	2·82	7·980	80,000	10,024
,,	M 1.1	24·00	2·96	2·94	8·702	64,000	7,354
,,	M 1.2	24·00	3·00	3·00	9·000	60,000	6,666
Blackbutt	B 4.1	24·00	3·09	3·04	9·393	71,500	7,611
,,	B 4.2	24 00	3·05	3·04	9·272	69 000	7,442
,,	B 22.1	23·25	2·80	2·83	7·924	75,000	9,465
,,	B 22.2	23·37	2·81	2·83	7·952	76,000	9,557
,,	F 1.1	23·90	2·98	3·20	9·536	70,000	7,337
,,	F 1.2	24·00	3·00	3·00	9·000	65,000	7,222
,,	P 1.1	23·37	2·83	2·84	8·037	83,000	10,327
,,	P 1.2	23·31	2·93	2·91	8·526	90,500	10,614
,,	M 3.1	24·00	2·92	2·86	8·351	48,000	5,749
,,	M 3.2	24·00	2 92	2·90	8·468	54,000	6,377
Spotted Gum	B 3.1	24·00	2·96	3·15	9·324	61,700	6,617
,,	B 3.2	24·00	3·09	2·96	9·146	59,500	6,505
,,	C 4.1	24·31	2·90	2·92	8·468	85,000	10,038
,,	C 4.2	24·25	2·91	2·93	8·526	73,000	8,561
,,	B 14.1	23·75	2·90	2·83	8·207	68,500	8,346
,,	B 14.2	23·75	2·92	3·10	9·052	77,400	8,550
,,	M 2.1	24·00	2·94	2·92	8·584	60,000	6,989
,,	M 2.2	24·00	2·96	2·96	8·757	68,000	7,762
Red Gum	C 6.1	24·31	2·84	2·91	8·264	67,100	8,192
,,	C 6.2	24·31	2·94	2·92	8·584	61,250	7,134
,,	B 11.1	24·18	2·85	2·83	8·065	71,000	8,803
,,	B 11.2	23·37	2·94	2·84	8·364	63,000	7,532
,,	M 123.1	24·00	2·96	2·96	8·757	40,000	4,565
,,	M 123.2	24·00	2·97	2·95	8·757	41,500	4,737
Flooded Gum	A 3.1	24·00	3·00	3·01	9·030	53,250	5,897
,,	A 3.2	24·00	2·98	3·02	9·000	48,250	5,361
,,	F 5.1	24·00	2·98	2·96	8·821	76,750	8,702
,,	F 5.2	24·00	2·97	3·00	8·910	77,500	8,698
,,	P 8.1	23·50	2·72	2·81	7·643	74,000	9,681
,,	P 8.2	23·43	2·64	2·63	6·956	69,250	9,955
Grey Gum	F 4.1	23·90	3·02	3·02	9·120	65,000	7,127
,,	F 4.2	24·00	3·00	3·00	9·000	70,000	7,778
,,	P 7.1	23·43	3·02	2·92	8·835	89,000	10,076
,,	P 7.2	23·50	3·00	2·91	8.730	89,850	10,281
Slaty Gum	L 1.1	24·00	2·94	2·93	8·614	63,000	7,314
,,	L 1.2	23·87	2·92	2·91	8·497	72,500	8,532
Mountain Gum	B 19.1	23·25	2·60	2·80	7·886	59,750	7,576
,,	B 19.2	23·75	2·70	2·61	7·047	57,250	8,124
Woollybutt	B 5.1	23·50	2·99	2·90	8·671	61,200	7,058
,,	B 5.2	23·50	2·96	2·94	8·702	61,700	7,090
,,	B 15.1	23·50	2·83	2·84	8·037	67,500	8,398
,,	B 15.2	23·18	3·00	2·91	8·730	75,000	8,590
Mahogany	F 2.1	24·00	3·00	2·96	8·880	82,500	9,292
,,	F 2.2	24·00	3·02	3·00	9·060	80,000	8,830
Forest Mahogany	D 4.1	23·30	2·84	2·81	7·980	48,500	6,077
,,	D 4.2	23·40	2·84	2·82	8·008	37,600	4,695
,,	P 11.1	23·31	2·84	2·90	8·250	83,350	10,345
,,	P 11.2	23·68	2·90	2·90	8·410	78,500	9,334

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of New South Wales timbers.

Modulus of Elasticity in lbs. per Sq. Inch.	Number of Days Seasoning.	Compressions in Inches.									Remarks.
		10,000 lb.	20,000 lb.	30,000 lb.	40,000 lb.	50,000 lb.	60,000 lb.	70,000 lb.	80,000 lb.	90,000 lb.	
1,580,431	227	·015	·036	·050	·063	·075	·090	..	..	..	
1,960,682	230	·013	·027	·042	·054	·066	·080	..	..	..	
2,041,900	854	·014	·029	·042	·056	·068	..	..	..	..	Deflected ⅜″ before breaking.
1,073,100		·011	·021	·035	·045	·058	·072	·088	·111	..	
2,667,000	845	·010	·020	·031	·040	·048	·056	·064	·073	·083	
2,868,600		·010	·020	·030	·040	·050	·060	·070	·083	..	
1,306,400	361	·020	·040	·058	·080	·103	·126	..	..	..	
1,123,200		·023	·046	·070	·093	·113	·144	..	..	..	
....	157	..	..	..	..	..	..	..	..	..	Diagram defective.
....	290	·008	·014	·024	·030	·043	·050	..	..	..	
2,890,400	854	·010	·022	·032	·043	·055	·067	·080	·104	..	
2,350,700		·012	·024	·036	·048	·060	·070	·080	·094	·112	
1,533,650	34	·020	·037	·050	·061	·075	·084	..	..	..	
2,344,080		·011	·026	·043	·060	·070	·084	..	..	..	
1,927,100	846	·012	·024	·038	·048	·058	·066	·075	·086	·104	
2,057,600		·011	·024	·035	·045	·056	·067	·080	·095	·115	
1,864,755	316	·018	·035	·051	·069	·085	..	..	..	..	
1,372,852		·021	·042	·069	·084	..	..	..	..	..	
2,136,400	845	·011	·023	·035	·046	·056	·066	·077	·091	·110	
1,802,900		·013	·026	·040	·051	·063	·079	·097	·154	..	
2,068,395	..	·008	·020	·040	·050	·060	..	..	..	..	Unseasoned.
1,600,000		·010	·025	·040	·075	·080	..	..	..	..	
2,222,222	320	·015	·023	·038	·051	·069	·093	..	..	..	
1,328,276		·019	.040	·056	·070	·084	·108	..	..	..	
1,956,100	862	·015	·030	·045	·062	·075	·092	·110	..	..	
1,959,600		·015	·030	·045	·059	·073	·088	·104	..	..	
1,672,910	313	·017	·031	·046	·061	·076	·093	..	..	..	
1,907,881		·015	·028	·043	·056	·070	·085	..	..	..	
2,077,400	843	·014	·028	·046	·058	·070	·082	·096	·108	..	
2,103,200		·013	·025	·039	·047	·057	·068	·078	·093	·115	
2,155,379	..	·006	·020	·050	·070	..	..	..	..	..	Unseasoned.
2,125,649		·010	·020	·035	·060	..	..	..	..	..	
2,717,002	409	·010	·018	·034	·050	·070	·110	..	..	..	
1,339,115		·018	·043	·066	·090	·120	·200	..	..	..	
2,208,600	835	·013	·026	·040	·053	·065	·077	·088	·102	..	
1,537,400		·018	·036	·054	·069	·083	·096	·115	..	..	
2,226,700	854	..	..	..	..	..	..	..	..	..	Diagram defective.
2,915,260		·009	·018	·027	·036	·045	·058	·073	..	..	
2,096,729	..	·010	·020	·040	·065	·080	..	..	..	..	Unseasoned.
1,369,613		·013	·030	·048	·060	·075	..	..	..	..	
1,730,500	835	·017	·034	·053	·068	·085	·103	..	..	..	
1,089,200		·027	·054	·081	·107	·140	·192	..	..	..	
2,141,900	855	·014	·028	·042	·058	·076	·097	·134	..	..	
1,552,600		·018	·035	·054	·073	·094	·130	..	..	..	
1,308,740	351	·018	·050	·085	·160	..	..	..	..	..	
1,454,155		·022	·044	·075	·016	..	..	..	..	..	
1,417,475	86	·020	·037	·058	·076	·100	..	..	..	..	
1,377,733		·022	·039	·068	·078	..	..	..	..	..	
2,222,177	346	·013	·025	·037	·050	·063	·076	..	..	..	
1,887,878		·015	·028	·043	·057	·072	·087	..	..	..	
2,365,100	844	·013	·026	·040	·053	·065	·078	·095	..	..	
2,609,600		·013	·026	·039	·052	·064	·080	·096	..	..	
1,640,559	347	·017	·033	·049	·064	·080	·097	..	..	..	
1,866,666		·015	·023	·043	·057	·072	·088	..	..	..	
2,122,600	847	·012	·025	·040	·052	·062	·075	·091	·111	·138	
2,340,600		·011	·023	·036	·047	·058	·071	·083	·104	·160	
958,510	289	·029	·058	·087	·114	·146	·192	..	..	..	
1,369,100		·021	·042	·064	·086	·108	·133	·174	..	..	
1,673,800	850	·018	·036	·054	·072	·092	·142	..	..	..	
1,872,400		·018	·036	·057	·078	·105	..	..	..	..	
1,935,845	320	·014	·028	·033	·050	·063	·090	..	..	..	
.....		..	..	..	..	..	..	..	..	..	Diagram defective.
2,016,500	854	·014	·030	·043	·058	·074	·095	..	..	..	
1,770,600		·015	·029	·045	·059	·073	·089	·108	..	..	
2,137,248	347	·013	·026	·038	·051	·070	·079	·085	..	..	
1,982,549		·014	·027	·041	·053	·067	·080	..	..	..	
1,123,000	34	·026	·052	·076	·100	..	..	..	..	..	
1,125,000		..	..	..	..	..	..	..	..	..	Diagram defective.
2,356,000	840	·012	·024	·036	·049	·062	·075	·085	·102	..	
2,166,600		·013	·026	·039	·051	·064	·076	·093	..	..	

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TABLE No. 5.—Compressive strength

Local Name.	Number and Letter.	Size of Specimen in Inches. Length.	Breadth.	Thickness.	Area in square inches.	Total breaking load in pounds.	Breaking load in Pounds per Sq. Inch.
Swamp Mahogany	B 6.1	24·00	3·00	2·96	8·880	54,000	6,081
,,	B 6.2	24·00	3·00	2·98	8·940	63,100	7,058
,,	B 10.1	23·37	2·82	2·90	8·192	60,200	7,348
,,	B 10.2	23·68	2·74	2·83	7·754	60,000	7,737
,,	P 12.1	23·18	2·93	2·80	8·204	62,800	7,654
,,	P 12.2	23·25	2·82	2·83	7·994	55,250	6,910
Mountain Ash	B 7.1	23·40	2·84	2·82	8·008	52,500	6,518
,,	B 7.2	23·50	3·08	3·13	9·640	59,100	6,130
,,	C 3.1	21·31	3·00	3·00	9·000	69,250	7,694
,,	C 3.2	24·31	2·92	3·00	8·760	71,200	8,193
,,	B 18.1	24·00	2·51	2·50	6·275	54,700	8,717
,,	B 18.2	24·00	2·60	2·60	6·760	60,250	8,912
Stringy Bark	A 4.1	24·00	3·00	3·00	9·000	60,000	6,666
,,	A 4.2	23·90	3·04	2·98	9·059	58,750	6,484
,,	C 5.1	21·12	2·83	2·91	8·235	56,250	6,830
,,	C 5.2	24·18	2·84	2·93	8·321	67,500	8,111
,,	B 12.1	24·18	2·90	2·92	8·468	75,500	8,915
,,	B 12.2	24·66	2·93	2·92	8.555	75,400	8,813
Messmate	B 20.1	24·66	2·72	2·61	7·099	65,500	9,226
,,	B 20.2	24·00	2·72	2.70	7·344	62,300	8,483
,,	P 6.1	23·50	2·92	2·83	8·263	85,250	10,316
,,	P 6.2	23·31	2·91	2·90	8·439	84,750	10,042
Grey Box	D 2.1	23·40	2·84	2·83	8·037	68,800	8,560
,,	D 2.2	23·50	2·83	2·83	8·008	68,000	8,490
Brush, or Whitebox	B 9.1	23·87	2·72	2·83	7·697	72,500	9,414
,, ,,	B 9.2	23·96	2·73	2·84	7·753	67,500	8,706
,, ,,	P 10.1	23·43	2·71	2·83	7·683	53,750	6,995
,, ,,	P 10.2	23·31	2·74	2·72	7·452	48,750	6,541
Bloodwood	P 9.1	23·43	2·93	2·93	8.599	99,000	11,512
,,	P 9.2	23·18	2·92	2·92	8·526	85,800	10,063
,,	B 13.1	24·25	3·00	2·94	8·820	78,800	8,934
,,	B 13.2	24·56	2·91	2·83	8·235	75,400	9,155
Blackwood	B 8.1	23·20	3·14	3·07	9·640	70,500	7,313
,,	B 8.2	23·40	3·07	3·15	9·670	66,600	6,887
,,	B 21.1	23·87	2·90	2·83	8·207	71,500	8,712
,,	B 21.2	24·25	2·83	2·83	8·008	68,000	8,490
Forest Oak	A 1.1	24·00	2·96	2·95	8·732	65,750	7,531
,,	A 1.2	23·70	2·99	3·03	9·060	79,250	8,747
,,	P 13.1	23·37	2·72	2·73	7·425	72,250	9,730
,,	P 13.2	23·31	2·83	2·53	7·172	62,750	8,748
Turpentine	A 2.1	23·90	2·99	3·02	9·030	51,500	5,706
,,	A 2.2	23·80	3·02	3·01	9·090	53,750	5,913
,,	B 23.1	23·37	2·70	2·73	7·371	66,100	8,967
,,	B 23.2	23·31	2·72	2·73	7·425	70,750	9,311
,,	P 3.1	23·43	2·71	2·52	6·829	60,750	8,895
,,	P 3.2	23·37	2·72	2·70	7·344	63,500	8,646
Pine	C 7.1	24·25	2·93	2·94	8·614	64,300	7,464
,,	C 7.2	24·37	2·92	2·94	8·599	59,900	6,965
,,	D 3.1	23·40	2·84	2·82	8·009	32,500	4,058
,,	D 3.2	23·30	2·82	2·80	7·896	39,500	5,002
Hoop, or Moreton Bay Pine	P 17.1	24·68	2·94	3·01	8·849	42,750	4,831
,, ,,	P 17.2	24·75	2·81	2·83	7·952	37,750	4,747
Rosewood	D 5.1	23·50	2·82	2·80	7·896	48,100	6,092
,,	D 5.2	23·40	2·82	2·76	7·783	41,800	5,370
,,	P 16.1	22·56	2·83	2·92	8·263	66,000	7,987
,,	P 16.2	23·43	2·82	2·94	8·290	68,800	8,298
Coach-wood, or Leather Jacket	B 24.1	23·68	2·90	2·83	8·207	55,250	6,732
,, ,,	B 24.2	23·43	2·82	2·82	7·966	51,250	6,433
,, ,,	P 14.1	23·37	2·64	2·84	7·497	48,800	6,508
,, ,,	P 14.2	23·25	2·71	2·90	7·859	53,500	6,807
Black Bean	C 1.1	24·25	3·00	2·91	8·730	51,800	5,933
,,	C 1.2	24·25	2·80	2·81	7·868	49,250	6,259
Red Bean	C 2.1	24·31	2·93	2·93	8·614	40,250	4,672
,,	C 2.2	24·12	3·10	2·93	9·083	54,750	6,027
,,	P 15.1	23·37	2·64	2·84	7·497	48,800	6,508
,,	P 15.2	23·25	2·71	2·90	7·859	53,500	6,807
Beech, or Negro Head	P 18.1	24·66	2·91	2·82	8·220	62,000	7,525
,, ,,	P 18.2	24·12	2·80	2·90	8·120	59,500	7,328
Red Cedar	P 19.1	24.37	2·81	2·91	8·177	22,750	2,782
,,	P 19.2	24·31	2·90	2·82	8·178	24,300	2,971
Australian Teak	F 6.1	23·90	2·96	2·92	8·643	54,000	6.250
,,	F 6.2	24·00	2·93	2·92	8·555	57,750	6,754

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of New South Wales timbers—*continued.*

Modulus of Elasticity in lbs. per Sq. Inch.	Number of Days Seasoning.	Compressions in Inches. 10,000 lb.	20,000 lb.	30,000 lb.	40,000 lb.	50,000 lb.	60,000 lb.	70,000 lb.	80,000 lb.	90,000 lb.	Remarks.
1,216,215	77	·025	·040	·055	·070	·084	..	..	..	..	
2,276,243		·012	·023	·035	·049	·064	·085	..	..	..	
1,783,260	855	·016	·032	·050	·065	·087	·131	..	..	..	
1,796,580		·017	·035	·052	·070	·091	·143	..	..	..	
1,766,500	849	·016	·032	·048	·063	·083	·104	..	..	..	
1,454,100		·020	·040	·060	·080	·100	..	..	..	..	Broke and sheared along gum vein; wormy.
1,825,842	34	·016	·032	·050	·070	·096	..	..	..	..	
1,354,310		·018	·036	·050	·066	·079	..	..	..	..	
1,508,000	849	·018	·036	·054	·072	·091	·118	·166	..	..	
1,585,940		·018	·036	·054	·072	·090	·112	·158	..	..	
1,739,500	850	·022	·045	·067	·087	·119	..	..	..	..	
2,290,500		·012	·031	·047	·066	·087	·130	..	..	..	
1,777,733	84	·015	·029	·045	·061	·075	..	..	..	..	
1,902,590		·015	·029	·045	·061	·076	..	..	..	..	
1,627,500	835	·019	·038	·057	·077	·098	..	..	..	..	
1,529,900		·019	·038	·057	·076	·097	·123	..	..	..	
2,380,300	848	·012	·025	·039	·051	·064	·078	·093	..	..	Broke and sheared through gum vein.
2,166,900		·013	·026	·039	..	..	..	..	..	..	Broke & shear' thro' gum vein; diag'm defective.
2,316,000	851	·015	·032	·047	·060	·074	·091	..	..	..	
2,253,800		·014	·030	·044	·063	·080	·098	..	..	..	
1,961,200	841	·014	·030	043	·058	·072	·084	·099	·120	..	
2,125,950		·013	·026	·041	·054	·068	·083	·095	·116	..	
2,338,330	750	·012	·025	·040	·053	·069	·080	..	..	..	
2,350,000		·012	·025	·039	·052	·068	·076	..	..	..	
2,335,900	848	·013	·026	·040	·052	·067	·088	·115	..	..	
2,378,100		·013	·026	·040	·052	·065	·085	..	..	..	
1,419,100	849	·021	·043	·063	·037	·126	..	..	..	..	
1,227,200		·025	·053	·077	·112	..	..	..	..	..	
2,190,350	849	·012	·025	·039	·050	·061	·073	·085	·098	·115	
1,942,500		·014	·029	·046	·060	·072	·087	·102	·125	..	Slight crack longitudinally.
1,773,800	847	·015	·028	·044	·059	·074	·090	·110	..	..	
1,807,600		·016	·035	·044	·069	·087	·109	·145	..	..	Broke along gum vein.
2,187,853	30	·011	·022	·037	·051	·067	·081	.	..	..	
1,396,070		·017	·035	·050	·065	·080	·095	..	..	..	
1,711,200	851	·017	·035	·050	·068	·085	·108	·142	..	...	
1,892,400		·016	·032	·048	·064	·082	·104	..	..	..	
1,741,099	83	·016	·033	·048	·064	·081	·097	..	..	..	
1,743,886	68	·017	·034	·046	·059	·076	·088	..	..	..	
2,331,700	847	·013	·027	·040	·053	·065	·080	·102	..	..	
		·018	·035	.055	·072	·088	·117	..	..	..	Specimen cracked longitudinally
1,499,771	86	·018	·036	·051	·070	·098	..	..	..	..	
1,265,471		·023	·042	·064	·084	·110	..	..	..	..	
1,982,000	862	·016	·032	·051	·069	·089	·116	..	..	..	
1,652,400		·019	·040	·058	·077	·098	·126	·182	..	..	
1,525,300	843	·022	·045	·066	·084	·104	·134	..	..	..	
1,768,300		·018	·036	·054	·071	·090	·119	..	..	..	
1,340,500	835	·020	·040	·062	·081	.105	·132	..	..	..	
1,619,700		·017	·034	·054	·070	·092	·170	..	..	..	
781,940	35	·037	·075	·117	..	..	..	..	..	..	
1,735,800		·017	·034	·057	·097	..	..	..	..	..	
1,394,900	861	·020	·040	·063	·086	..	..	..	..	..	
1,004,000		·031	·062	·100	..	..	..	.	..	..	
1,116,070	36	·026	·055	·075	·105	..	..	..	..	..	
1,288,452		·024	·046	·069	·096	..	..	..	..	..	
1,365,180	839	·020	·040	·059	·078	·096	·123	..	..	..	
1,776,800		·016	·032	·048	·064	·076	·088	·132	..	..	
1,442,700	822	·020	·040	·060	·080	·107	..	..	..	..	
1,176,800		·025	·050	.075	·101	·155	..	..	..	..	
1,355,600	840	·022	·045	·066	·091	·150	..	..	..	..	
1,344,720		·022	·046	·066	·090	·122	..	..	..	..	
1,488,140	849	·022	·044	·065	·086	·114	..	..	..	..	Broke through knot in middle.
1,340,000		·024	·048	·070	·096	·130	..	..	..	..	Broke through knot near ends
940,790	849	·030	·060	·100	·170	..	..	..	..	..	Broke longitudinally.
1,106,600		·025	·050	·075	·100	·139	..	..	..	..	
1,385,600	839	·021	·040	·061	·083	..	..	..	..	..	
1,344,720		·020	·041	·061	·083	..	..	..	..	..	
1,875,100	861	·016	·030	·049	·063	·082	·107	..	..	..	Sheared and broke at a crack.
1,747,700		·017	·034	·051	·070	·093	..	..	..	..	Broke at knot.
496,810	861	·060	·130	..	..	..	..	..	..	..	Knotty.
540,520		·055	·108	..	..	..	..	..	..	..	Crossgrained.
1,754,838	..	·017	·032	·047	·063	·078	..	..	..	..	
2,011,649		·015	·023	·042	·055	·068	..	..	..	..	

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TABLE No. 5.—Compressive strength of Victorian, South Australian,

Local Name.	Number and Letter.	Size of Specimen in Inches. Length.	Breadth.	Thickness.	Area in Square Inches.	Total Breaking Load n lbs.	Breaking Load in lbs. per Sq. Inch.
							VICTORIAN
Blackwood	BV 1	24·12	2·81	2·73	7·671	55,000	7,169
,,	BV 2	24·00	2·73	2·82	7·698	64,250	8,345
,,	BV 3	24·00	2·81	2·80	7·868	56,100	7,130
Mahogany	MV 1	23·87	2·90	2·72	7·888	58,750	7,448
,,	MV 2	24·00	2·81	2·90	8·149	50,250	6,166
,,	MV 3	23·87	2·80	2·81	7·868	60,500	7,689
Blue Gum	M 1.1	23·50	2·44	2·61	6·380	67,200	10,532
,,	M 1.2	23·43	2·74	2·53	6·944	62,700	9,028
Mountain Ash	M 2.1	23·75	2·73	2·80	7·658	70,000	9,140
,,	M 2.2	23·31	2·60	2 70	7·020	58,100	8,276
Red Gum	M 3.1	22·37	2·92	3·00	8·760	52,000	5,936
,,	M 3.2	23·37	2·90	2·91	8·439	37,500	4,443
							SOUTH AUSTRALIAN
Sugar Gum	SA 1.1	23·56	2·87	2·87	8·265	49,000	5,929
,,	SA 1.2	22·81	2·93	2 93	8·620	51,500	5,970
Box	SA 2.1	23·50	2·93	2·93	8·620	59,100	6,856
,,	SA 2.2	22·81	2·93	2·87	8·444	63,000	7,461
Blue Gum	SA 3.1	23·68	2·87	2·87	8·265	62,500	7,561
,,	SA 3.2	23·62	2·93	2·87	8·444	64,500	7,639
Red Gum	SA 4.1	23·75	2·87	2·87	8·265	43,000	5,203
,,	SA 4.2	23·37	2·87	2·87	8·265	33,750	4,083
							WESTERN AUSTRALIAN
Jarrah	MCD 1.1	24·12	2·80	2·71	7·588	44,700	5,891
,,	MCD 1.2	24·00	2 80	2·73	7·644	41,000	5,364
,,	MCD 4.1	24·62	2·74	2·80	7·672	58,500	9,381
,,	MCD 4.2	24·00	2·71	2·75	7·452	58,400	7,836
Red Gum	MCD 2.1	24·00	2·84	2·84	8·062	41,500	5,145
,,	MCD 2.2	24·00	2·80	2·82	7·896	38,500	4,989
Karri	MCD 3.1	24·12	2·72	2·81	7·657	52,000	6,791
,,	MCD 3.2	24·12	2·82	2·83	7·980	54,200	6,791
Jarrah	No. 2.B	23·58	2·71	2·71	7·344	39,425	5,368
Karri	D3 K	25·83	3·01	3 00	9·030	47,291	5,221
							QUEENSLAND
Ironbark	A 1	23·87	2·71	2·54	6·883	54,500	7,918
,,	A 2	23·81	2·54	2·71	6·883	50,500	7,337
Spotted Gum	C 1	23·87	2·72	2·72	7·398	62,800	8,488
,,	C 2	24·66	2·71	2·72	7·371	57,400	7,787
Tallowwood	D 1	23·96	2·72	2·72	7·398	48 100	6,501
,,	D 2	24·00	2·72	2·72	7·398	49,000	6,623
Bloodwood	F 1	24·00	2.72	2·71	7·371	35,000	4,748
,,	F 2	23·25	2·71	2·44	6·612	32,900	4,976
Turpentine	G 1	24·75	2·72	2.71	7·371	65,750	8,920
,,	G 2	23·87	2·72	2·70	7·344	69,250	9,429

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Western Australian, and Queensland timbers.

Modulus of Elasticity in lbs. per Sq. Inch.	Number of Days Seasoning.	Compressions in Inches.									Remarks.
		10,000 lb.	20,000 lb.	30,000 lb.	40,000 lb.	50,000 lb.	60,000 lb.	70,000 lb.	80,000 lb.	90,000 lb.	
TIMBERS.											
2,884,900	669	·019	·038	·056	·072	·093	..	..	..	..	
1,132,700		·016	·033	·051	·068	·087	·111	..	..	..	
1,326,200		·023	·048	·072	·093	·118	..	..	..	..	
1,384,900	669	·025	·052	·079	·105	·138	..	..	..	..	
1,214,400		·026	·052	·077	·102	·163	..	..	..	..	Broke at knot in centre.
1,132,730		·023	·046	·070	·094	·115	·160	..	..	..	Split longitudinally.
2,833,100	567	·013	·025	·037	·048	·061	·076	..	..	..	
2,327,500		·014	·030	·044	·057	·075	·092	..	..	..	
2,335,700	513	·013	·026	·039	·053	·068	·083	..	..	..	
2,142,500		·015	·031	·048	·060	·079	..	..	..	..	
851,410	491	·030	·063	·090	·120	·163	..	..	..	..	
1,384,900		·020	·041	·067	..	..	..	..	..	..	Broke along crack and gum veins.
TIMBERS.											
983,186	685	·030	·058	·088	·116	..	..	..	..	..	
1,058,561		·025	·050	·075	·100	·148	..	..	..	..	
1,090,487	720	·025	·050	·075	·100	·138	·218	..	..	..	
1,105,732		·025	·050	·075	·100	·130	·190	..	..	..	
1,123,874	815	·024	·048	·072	·092	·117	·212	..	..	..	
1,332,938		·020	·040	·060	·080	·110	·160	..	..	..	
592,487	696	·050	·110	·160	·240	..	..	..	..	..	
471,365		·061	·122	·200	..	..	..	..	..	..	
TIMBERS.											
706,520	589	·045	·090	·133	·188	..	..	..	..	..	
781,170		·032	·064	·101	..	..	..	..	..	..	
1,395,500	675	·035	·072	·108	·175	..	..	..	..	..	
1,618,600		·023	·056	·088	..	..	..	..	..	..	
850,170	589	·024	·048	·070	·094	·138	..	..	..	..	
1,125,700		·018	·037	·055	·074	·100	..	..	..	..	
1,312,800	547	·023	·047	·070	·095	·124	..	..	..	..	
1,634,300		·020	·040	·062	·084	·101	..	..	..	..	
2,079,815	203	..	..	..	..	..	..	..	..	..	Tested as a check on specimens MCD.
1,444,727	—	..	..	..	..	..	..	..	..	..	
TIMBERS.											
1,825,500	221	·019	·039	·059	·079	·119	..	..	..	..	Slightly worm-eaten.
1,504,100		·023	·048	·070	·098	·182	..	..	..	..	,, ,, ,,
1,744,350	433	·018	·037	·055	·072	·090	·120	..	..	..	Slight cracks.
1,756,900		·019	·040	·067	·076	·097	..	..	..	..	,, ,,
1,542,700	311	·021	·048	·063	·088	..	..	..	..	..	,, ,,
1,622,000		·022	·045	·068	·092	..	..	..	..	..	,, ,, and gum-veins.
1,017,500	433	·032	·064	·120	..	..	..	..	..	..	Worm-eaten, splits and knotty.
879,030		·042	·084	·158	..	..	..	..	..	..	Splits, gum-veins, and knots.
2,238,400	252	·015	·032	·050	·065	·082	·110	..	..	..	
1,914,220		·017	·035	·053	·070	·085	·104	..	..	..	

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TABLE No. 6.—Compressive strength of New South Wales timbers.

Local Name.	Number and Letter.	Size of Specimen in Inches.			Area in Square Inches.	Total Breaking Load in lbs.	Breaking Load in lbs. per. sq. inch.	No. of Days Seasoning.
		Length.	Breadth.	Thickness.				
Red Ironbark	P 4.1	47·31	2·84	2·83	8·037	93,500	11,634	708
"	P 4.2	47·43	2·83	2·81	7·952	77,100	9,699	
"	B 16.1	47·31	2·90	2·81	8·147	70,300	8,629	727
"	B 16.2	47·25	2·80	2·90	8·127	70,750	8,713	
"	B 2.1	47·00	2·93	2·91	8·526	75,500	8,855	142
"	B 2.2	47·00	2·98	2·97	8·850	76,700	8,666	139
Grey Ironbark	B 17.1	47·25	2·80	2·83	7·924	81,250	10,253	727
"	B 17,2	47·50	2·91	2·84	8·278	89,000	10,751	
"	B 1.1	47·00	2·96	2·94	8·702	83,600	9,606	200
"	B 1.2	47·00	2·98	2·98	8·830	83,100	9,358	
White Ironbark	P 5·1	47·43	2·93	2·94	8·614	92,800	10,773	709
"	P 5.2	47·31	2·84	2·90	8·236	84,250	10,229	
"	D 1.1	47·40	2·80	2·81	7·868	66,100	8,401	37
"	D 1.2	47·20	2·83	2·84	8·037	78,800	9,804	
Tallow Wood	P 2.1	47·25	2·84	2·64	7·497	77,300	10,310	708
"	P 2.2	47·43	2·72	2·90	7·888	76,250	9,666	
"	F 3.1	48·00	2·98	3·02	9·000	68,000	7,555	317
"	F 3.2	48·00	3·00	2·98	8·940	70,500	7,886	
"	M 1.1	48·00	2·98	2·96	8·822	50,000	5,668	85
"	M 1.2	48·00	2·96	2·94	8·702	48,000	5,517	
Blackbutt	B 22.1	47·87	2·81	2·80	7·868	62,000	7,880	736
"	B 22.2	47·75	2·82	2·92	8·234	68,200	8,282	
"	P 1 1	47·37	2·93	2·84	8·335	88,250	10,587	706
"	P 1.2	47·25	2·92	2·84	8·321	82,200	9,878	
"	M 3.1	48·00	2·94	2·82	8·290	44,000	5,308	85
"	M 3.2	48·00	2·96	2·90	8·584	40,000	4,660	
"	F 1.1	48·00	2·96	3·00	8·880	65,300	7,342	314
"	F 1.2	48·10	2·98	3·05	9·080	69,000	7,591	
"	B 4.1	47·00	3·00	2·96	8·880	70,300	7,917	259
"	B 4.2	47·00	2·96	2·93	8·672	70,900	8,175	
Spotted Gum	C 4.51	48·37	2·98	2·96	8·822	88,500	10,033	555
"	C 4.52	48·37	2·94	3·00	8·820	80,050	9,076	
"	B 14.1	47·12	2·84	2·93	8·335	67,500	8,112	727
"	B 14.2	47·37	2·83	2·81	7·785	64,250	8,253	
"	M 2.1	48·00	2·95	2·95	8·702	65,000	7,469	84
"	M 2.2	48·00	2·96	2·96	8·760	69,000	7,875	
"	B 3.1	47·00	2·87	2·91	8·351	53,650	6,424	348
"	B 3.2	47·00	2·77	2·91	8·060	52,300	6,488	
Red Gum	B 11.1	48·75	2·70	2·81	7·587	63,750	8,403	727
"	B 11.2	47·50	2·72	2·81	7·643	62,500	8,238	
"	C 6.81	48·12	2·96	2·90	8·584	52,000	6,057	555
"	C 6.82	48·37	2·96	2·92	8·643	55,000	6,363	
"	M 3.1	48·00	2·96	2·95	8·732	44,200	5,062	290
"	M 3.2	48·00	2·98	2·97	8·850	55,300	6,248	
Flooded Gum	P 8.1	47·56	2·83	2·73	7·725	72,500	9,599	706
"	P 8.2	47·31	2·83	2·71	7·683	68,400	8,913	
"	F 5.1	48·00	3·02	2·98	9·000	78,500	8,722	347
"	F 5.2	48·10	3·00	3·00	9·000	81,500	9,056	

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TABLE No. 6.—Compressive strength of New South Wales timbers.—*continued.*

Local Name.	Number and Letter.	Size of Specimen in Inches.			Area in Square Inches.	Total Breaking Load in lbs.	Breaking Load in lbs. per Sq. Inch.	No of days Seasoning.
		Length.	Breadth.	Thickness.				
Flooded Gum	A 3.1	48·00	3·01	2·97	8·940	51,000	5,705	89
,,	A 3.2	48·00	3·02	3·02	9·120	53,500	5,863	
Grey Gum*	P 7.1	47·50	2·84	2·83	8·051	54,000	6,707	709
,,	P 7.2	47·25	2·84	2·80	7·952	76,000	9,560	
,,	F 4·1	48 10	2·96	2·96	8·760	62,000	7,078	318
,,	F 4.2	48·00	3·00	2·93	8·940	62,000	6,935	
Mountain Gum	B 19.1	48·37	2·63	2·63	6·916	53,250	6,917	723
,,	B 19.2	47·25	2·71	2·74	7·425	49,400	6,653	
Woollybutt	B 15.1	47·37	2·82	2·81	7·938	61,250	7,716	727
,,	B 15.2	47·25	2·90	2·83	8·221	62,300	7,578	
,,	B 5.1	47·00	2·98	2·95	8 791	53,300	6,063	259
,,	B 5.2	47·00	2·99	2·94	8·790	54,200	6,180	
Mahogany	F 2.1	48·00	2·95	2·90	8·555	60,000	7,018	348
,,	F 2.2	48·00	3·00	2·94	8·825	77,500	8,787	
Forest Mahogany	P 11.1	47·56	2·83	2·81	7·952	76,000	9,557	702
,,	P 11.2	47·56	2·82	2·80	7·910	78,250	9,893	
,,	D 4.1	46·60	2·81	2·81	7·896	43,000	5,578	89
,,	D 4.2	47·30	2·81	2·84	7·980	56,500	7,080	
Swamp Mahogany	B 10.1	48·18	2·81	2·80	7·868	57,400	7,295	727
,,	B 10.2	48·00	2·80	2·90	8·127	62,000	7,636	
,,	P 12.1	47·37	2·90	2·84	8·236	57,300	6,957	715
,,	P 12.2	47·56	2·80	2·80	7·840	37,250	4,751	
,,	B 6.1	48·00	2·96	2·94	8·702	47,500	5,458	25
,,	B 6.2	48·00	2·92	2·94	8·580	58,100	6,763	
Mountain Ash	C 3.36	48·45	3·03	3·00	9·180	62,500	4,296	569
,,	C 3.37	48·35	3·04	3·00	9·120	69,500	7,620	
,,	B 18.1	48·43	2·71	2·72	7·371	55,250	7,497	723
,,	B 18.2	48·75	2·70	2·82	7·614	70,750	9,292	
,,	B 7.1	48·00	2·88	2·88	8 294	44,000	5,308	89
,,	B 7.2	47·20	3·10	3·12	9·672	43,500	4,498	
Stringybark	C 5.66	48·37	2 94	2·90	8·526	61,050	7,160	555
,,	C 5.67	48·37	2·96	2·90	8·584	62,000	7,222	
,, †	B 12.1	49·00	2·83	2·83	8·008	54,900	7,182	720
,,	B 12.2	47·87	2·81	2·81	7·896	64,250	8,137	
,,	A 4.1	48·00	3·02	3·02	9·120	50,000	5,482	87
,,	A 4.2	47·70	2·97	3·01	8·940	50,500	5,649	
Messmate	P 6.1	47·37	2·90	2·91	8·439	76,250	9,035	703
,, ‡	P 6.2	47·62	2·82	2·82	7·952	55,500	6,979	
,, §	B 20.1	48·56	2·80	2·93	8·204	62,250	7,588	725
,, §	B 20.2	48·50	2·74	3·00	8·220	62,000	7,542	
Brush, or Whitebox	P 10.1	47·25	2·80	2·71	7·588	50,000	6,590	711
,, ¶	P 10.2	47·18	2·82	2·81	7·924	46,500	5,868	
,,	B 9.1	48·18	2·80	2·82	7 896	60,500	7,662	720
,,	B 9.2	47·50	2·81	2·81	7·896	69,250	8,771	

* Broken through knot and gum vein, and sheared from knot to end.
† Broke along gum vein longitudinally.
‡ Faulty, broke along crack longitudinally.
§ Small worm-holes.
¶ Sap on one side of specimen.

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TABLE No. 6.—Compressive strength of New South Wales timbers—*continued.*

Local Name.	Number and Letter.	Size of Specimen in Inches.			Area in Square Inches.	Total Breaking Load in lbs.	Breaking Load in lbs. per Sq. Inch.	No. of Days Seasoning.
		Length.	Breadth.	Thickness.				
Grey Box	D 2.1	47·60	2·80	2·83	7·924	63,850	8,058	753
"	D 2.2	47·40	2·80	2·81	7·868	63,000	8,005	805
Bloodwood	P 9.1	47·12	2·90	2·90	8·410	83,250	9·899	711
" *	P 9.2	47·50	2·84	2·83	8·037	84,000	10,451	
"	B 13.1	48·67	2·91	2·82	8·206	63,900	7,787	720
" †	B 13.2	47·68	2·90	2·90	8·410	58,800	6,992	
Blackwood	B 21.1	47·56	2·90	2·92	8·468	56,250	6,643	725
"	B 21.2	47·50	2·83	2·83	8·008	52,750	6,586	
"	B 8.1	48·10	3·08	3·14	9·671	62,500	6,463	86
"	B 8.2	47·20	3·10	3·12	9·672	73,000	7,549	
Forest Oak‡	P 13.1	47·37	2·80	2·83	7·924	52,000	6,562	717
" §	P 13.2	47·37	2·70	2·73	7·371	37,000	5,020	
"	A 1.1	47·50	2·98	3·00	8·940	75,500	8,445	86
"	A 1.2	47·80	2·97	3·04	9·028	75,000	8,306	71
Turpentine	B 23.1	46·87	2·81	2·83	7·952	56,250	7,073	736
"	B 23.2	47·12	2·82	2·82	7·952	61,000	7,671	
"	P 3.1	47·18	2·63	2·72	7·153	62,250	8,702	706
"	P 3.2	47·12	2·70	2·63	7·098	60,250	8,488	
"	A 2.1	48·00	2·97	3·01	8·939	50,000	5,593	89
"	A 2.2	47·70	2·97	3·00	8·910	55,000	6,173	
Pine	C 7·96	48·37	2·98	2·98	8·880	64,000	7,207	555
"	C 7.97	48·50	3·00	3·00	9·120	58,500	6,414	
"	D 3.1	47·00	2·83	2·84	8·037	33,000	4,104	90
"	D 3.2	47·30	2·83	2·83	8·009	30,000	3,745	
Hoop, or Moreton Bay Pine	P 17.1	47·37	2·94	2·91	8·555	44,250	5,172	724
"	P 17.2	47·62	2·84	2·90	8·236	41,500	5,0 9	
Rosewood	P 16.1	47·62	2·93	2·32	8·377	53,500	6,386	706
"	P 16.2	47·31	2·94	2·91	8·360	57,500	6,877	
"	D 5·1	47·00	2·82	2·85	8·037	45,500	5,659	91
"	D 5.2	47·30	2·80	2·78	7·784	43,000	5,527	
Coach Wood, or Leather Jacket	P 14.1	47·12	2·74	2·74	7·521	35,000	4,653	706
"	P 14.2	47·18	2·81	2·80	7·868	42,250	5,370	
"	B 24.1	47·18	2·71	2·63	7·140	40,200	5,630	706
"	B 24.2	47·13	2·63	2·70	7·101	36,800	5,182	
Black Bean‖	C 1.6	48·45	3·00	3·04	9·120	52,250	5,729	484
"	C 1.7	48·25	3·02	3·66	11·053	56,000	5,066	
Red Bean¶	C 2.21	48·45	2·94	2·96	8·702	45,000	5,172	484
" ‖	C 2.22	48·62	2·90	2·90	8·410	46,000	5,469	569
White Beech	P 15.1	47·25	2·90	2·83	8·207	30,500	3,716	706
"	P 15.2	47·25	2·80	2·90	8·120	44,000	5,419	
Beach, or Negro Head	P 18.1	47·50	2·80	2·83	7·924	45,250	5,711	724
"	P 18.2	48·12	2·80	2·84	7·952	53,750	6,760	
Teak	F 6.1	48·00	2·88	2·90	8·352	48,500	5,808	...
"	F 6.2	47·70	2·90	2·84	8·246	44,000	5,340	
Red Cedar**	P 19.1	47·12	2·94	2·91	8·554	20,000	2,343	724
"	P 19.2	47·56	2·84	2·83	8·051	21,400	2,658	

* Broke along gum vein longitudinally.
† Broke and sheared along crack.
‡ Faulty, too much sap; longitudinal cracks and knot.
§ Faulty, too much sap; longitudinal cracks and knot, and sheared.
‖ Splintery fracture.
¶ Sudden failure.
** Cross-grain.

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TABLE No. 6.—Compressive strength of Victorian, South Australian, Western Australian, and Queensland timbers.

Local Name.	Number and Letter.	Size of Specimen in Inches. Length.	Breadth.	Thickness.	Area in Square Inches.	Total Breaking Load in lbs.	Breaking Load in lbs. per Sq. Inch.	No. of Days Seasoning.
VICTORIAN.								
Blue Gum	M 1.1	47·37	2·84	2·84	8·065	56,750	7,036	581
"	M 1.2	47·37	2·74	2·73	7·480	55,000	7,353	
Mountain Ash	M 2.1	47·51	2·74	2·70	7·398	46,500	6,286	527
"	M 2.2	47·31	2·64	2·60	6·864	51,250	7,467	
Red Gum	M 3.1	47·50	2·74	2·90	7·945	54,600	6,856	505
" *	M 3.2	48·66	2·84	2·82	8·023	47,750	5,952	
Blackwood	BV 1	48·12	2·80	2·83	7·924	45,500	5,742	683
"	BV 2	48·18	2·83	2·90	8·226	50,000	6,078	
Mahogany	MV 1	47·93	2·71	2·74	7·439	53,500	7,192	633
" †	MV 2	48·06	2·81	2·81	7·896	65,000	8,232	
SOUTH AUSTRALIAN.								
Sugar Gum	SA 1.1	47·66	2·90	2·88	8·178	52,500	6,419	689
"	SA 1.2	...	...	...	specimen useless			
Box	SA 2.1	47·32	2·92	2·82	8·234	49,000	5,950	724
"	SA 2.2	47·44	2·91	2·88	8·381	55,500	6,621	
Blue Gum	SA 3.1	47·76	2·9	2·87	8·323	53,000	6,368	815
"	SA 3.2	47·60	2·93	2·87	8·409	41,000	4,876	
Red Gum	SA 4.1	47·66	2·90	2·89	8·381	32,000	3,818	694
"	SA 4.2	47·49	2·89	2·89	8·352	31,000	3,712	
WESTERN AUSTRALIAN.								
Jarrah‡	MCD 1.1	48·12	2·80	2·73	7·658	46,200	6,0[illegible]3	604
"	MCD 1.2	48·25	2·80	2·73	7·658	37,500	4,897	
"	MCD 4.1	48.43	2·80	2·83	7·924	55,000	6,941	690
"	MCD 4.2	48·43	2·85	2·81	8·008	60,000	7,492	
Red Gum	MCD 2.1	48·12	2·74	2·84	7·795	41,300	5,298	602
"	MCD 2.2	48·00	2·73	2·81	7·739	4[illegible],500	5,233	
Karri *	MCD 3.1	48·18	2·84	2·83	7·868	39,000	4,957	562
" §	MCD 3.2	48·18	2·84	2·80	7·952	41,750	5,250	
Jarrah‖ ¶	No. 1 B 5	47·62	2·71	2·71	7·344	37,200	5,065	203
" ‖ ¶	No. 1 B 6	47·50	2·71	2·71	7·314	33,500	4,559	203
QUEENSLAND.								
Ironbark	A 1	48·06	2·71	2·72	7·371	58,500	7,936	227
"	A 2	48·06	2·71	2·72	7·371	57,900	7,855	
Spotted Gum	C 1	48·06	2·54	2·70	6·858	67,500	9,843	439
"	C 2	47·93	2·71	2·71	7·357	72,000	9,786	
Tallowwood	D 1	48·03	2·72	2·72	7·398	45,750	6,184	317
" **	D 2	48·12	2·72	2·72	7·412	44,900	6,057	
Bloodwood ††	F 1	48·03	2·60	2·72	7·072	32,000	4,525	439
"	F 2	48·12	2·60	2·70	7·020	28,750	4,095	
Turpentine	G 1	48·12	2·54	2·72	6·922	60,300	8,710	258
"	G 2	47·93	2·71	2·54	6·883	59,300	8,615	

* Broke at gum vein.
† Broke at knot.
‡ Sound straight grain.
§ Sound straight grain.
‖ Tested as a check on the specimens MCD.
¶ Longitudinal gum veins.
** Broke through worm hole
†† Cracked longitudinally.

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TABLE No. 7.—Compressive strength of New South Wales Timbers.

Local Name.	Number and Letter.	Size of Specimen in Inches.			Area in Square Inches.	Total Breaking Load in lbs.	Breaking Load in lbs. per Sq. Inch.	Number of Days Seasoning.
		Length.	Breadth.	Thickness.				
Red Ironbark	P 4 1	71·37	2·90	2·91	8·43	73,750	8,739	869
,,	P 4.2	70·75	2·00	2·00	4·00	33,350	8,338	
,,	B 16.1	71·63	2·82	2·90	8·17	68,500	8,376	880
,, *	B 16.2	70·75	2·00	2·00	4·00	25,000	6,250	
,,	B 2.1	69·00	3·00	2·85	8·55	61,400	7,181	140
,,	B 2.2	71·00	2·96	2·93	8·67	71,300	8,221	138
Grey Ironbark†	B 17.1	71·50	2·91	2·91	8·44	66,000	7,812	880
,,	B 17.2	70·68	2·00	2·00	4·00	25,000	6,250	
,,	B 1.1	71·00	3·01	3·03	9·12	71,000	7,785	200
,,	B 1.2	71·00	2·92	2·94	8·58	72,450	8,159	
White Ironbark	P 5.1	71·00	2·82	2·90	8·17	68,300	8,352	870
,,	P 5.2	70·68	2·00	2·00	4·00	26,500	6,625	
,,	D 1.1	70·70	2·83	2·87	8·12	61,000	7,512	90
,,	D 1.2	71·00	2·87	2·89	8·29	52,500	6,334	
Tallow Wood	P 2.1	71·50	2·82	2·90	8·17	55,750	6,817	862
,,	P 2.2	70·75	2·00	2·00	4·00	20,675	5,169	
,,	F 3.1	72·10	2·98	3·00	8·94	60,500	6,767	320
,,	F 3.2	72·10	3·00	3·02	9·06	64,500	7,119	
,,	M 1.1	72·00	2·98	2·98	8·88	40,000	4,504	84
,,	M 1.2	72·00	3·00	2·96	8·88	40,000	4,504	
Blackbutt	B 22 1	71·50	2·80	2·82	7·89	59,250	7,504	888
,,	B 22.2	70·62	2·00	2·00	4·00	24,562	6,140	
,,	P 1.1	71·75	2·84	2·90	8·23	71,250	8,651	867
,,	P 1.2	70·62	2·00	2·00	4·00	23,500	5,875	
,,	M 3.1	72·00	2·90	2·92	8·47	30,000	3,543	84
,,	M 3.2	72·00	2·90	2·92	8·47	38,000	4,488	
,,	F 1.1	72·10	3·02	2·98	9·00	56,500	6,278	317
,,	F 1.2	72·10	2·97	2·99	8·88	59,500	6,700	
,,	B 4.1	71·00	3·00	3·00	9·00	63,800	7,089	254
,,	B 4.2	71·00	2·99	3·01	8·99	56,000	6,222	
Spotted Gum	C 4.49	60·38	2·87	2·83	8·12	61,000	7,510	552
,,	C 4.50	60·50	2·93	2·98	8·73	65,500	7,503	
,,	B 14.1	71·62	2·90	2·90	8·41	58,000	6,895	880
,,	B 14.2	70·68	2·00	2·00	4·00	21,000	5,250	
,,	M 2.1	72·00	2·94	2·94	8·64	48,000	5,553	83
,,	M 2.2	72·00	2·97	2·97	8·82	44,000	4,989	
,,	B 3.1	71·00	2·87	2·91	8·35	46,400	5,556	343
,,	B 3.2	71·00	2·87	2·83	8·12	44,220	5,442	
Red Gum	B 11.1	71·37	2·81	2·80	7·86	52,500	6,673	880
,,	B 11.2	70·68	2·00	2·00	4·00	20,000	5,000	
,, ‡	C 6.79	60·43	2·90	2·93	8·49	43,500	5,120	552
,,	C 6 80	60·43	2·94	2·93	8·61	33,000	3,830	
,,	M 3 1	72·00	3·01	3·02	9·09	27,400	3,014	289
,,	M 3 2	72·00	2·96	3·01	8·91	33,200	3,726	
Flooded Gum	P 8.1	71·50	2·83	2·90	8·22	66,500	8,089	862
,,	P 8.2	70·75	2·00	2·00	4·00	25,037	6,259	
,,	F 5.1	72·10	2·99	2·99	8·94	70,500	7,886	350
,,	F 5.2	72·10	3·02	2·96	8·94	63,500	7,103	
,,	A 3.1	72·20	3·00	3·04	9·12	50,500	5,537	90
,,	A 3.2	71·70	3·00	3·01	9·03	50,500	5,596	
Grey Gum	P 7 1	71·62	2·91	2·91	8·46	62,300	7,357	870
,,	P 7 2	70·75	2·00	2·00	4·00	20,500	5,125	
,,	F 4 1	72·20	2·97	2·96	8·78	58,500	6,655	351
,,	F 4.2	71·70	3·01	2·94	8·85	56,000	6,328	

* Worm-hole in corner. † Knot near end of specimen. ‡ Buckled at corner, near end.

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TABLE No. 7.—Compressive strength of New South Wales Timbers—*continued.*

Local Name.	Number and Letter.	Size of Specimen in Inches.			Area in Square Inches.	Total Breaking Load in lbs.	Breaking Load in lbs. per Sq. Inch.	Number of Days Seasoning.
		Length.	Breadth.	Thickness.				
Ribbon Gum *	K 1	72·02	2·00	2·00	4·00	10,800	2,700	242
,,	K 2	72·00	2·00	1·91	3·82	11,000	2,880	
Mountain Gum	B 19.1	73·00	2·71	2·64	7·15	40,100	7,056	876
,,	B 19.2	70·63	2·00	2·00	4·00	18,125	4,531	
Grey or Mountain Gum	J 1	72·00	2·00	1·93	3·86	12,500	3,238	242
,,	J 2	72·00	2·00	2·00	4·00	12,800	3,200	
Woollybutt	B 15·1	71·75	2·92	2·92	8·52	57,200	6,709	880
,,	B 15·2	70·68	2·00	2·00	4·00	19,900	4,975	
,,	B 5.1	71·00	2·99	2·95	8.82	44,700	5,068	256
,,	B 5.2	71·00	2·97	2·91	8·64	52,000	6.017	
Mahogany	F 2.1	72·10	3·06	2·92	8·94	71,500	7,998	351
,,	F 2.2	72·10	2·96	2·99	8·85	65,500	7,401	
Forest Mahogany	P 11.1	71·50	2·91	2·82	8·20	68,250	8,317	863
,,	P 11.2	70·75	2·00	2·00	4·00	22,575	5,641	
,,	D 4.1	70·70	2·91	2·88	8·38	40,000	4,773	91
,,	D 4 2	71·30	2·87	2·88	8·27	45,000	5,439	
Swamp Mahogany	B 10.1	72·00	2·64	2·73	7·20	32,750	4,544	880
,,	B 10 2	70·68	2·00	2·00	4·00	18,275	4,569	
,, †	P 12.1	71·37	2·91	2·92	8·49	42,000	4 943	872
,, †	P 12.2	70·68	2·00	2·00	4·00	14,625	3,656	
,,	B 6 1	72 00	2·90	2·90	8·41	44,500	5,291	25
,,	B 6.2	72·00	2·96	2·95	8·73	45,700	5,234	
Mountain Ash	C 3.34	60·30	3·02	3·00	9·06	48,000	5,300	566
,,	C 3.35	60·27	2·93	3·02	8·99	51,000	5,667	
,, ‡	B 18.1	72·25	2·72	2·74	7·45	49,200	6,602	876
,,	B 18.2	70·75	2·00	2·00	4·00	22,625	5,656	
,,	B 7.1	71·20	2·87	2·88	8·27	45,000	5,441	91
,,	B 7.2	71·60	2·89	2·90	8·38	41,500	4,952	93
Stringy Bark	C 5.64	60 35	2·95	2·56	7·55	47,000	6,225	552
,,	C 5.65	60·25	2·90	2·85	8·26	44,500	5,387	
,,	A 4.1	71·70	2·98	3·03	9·03	52,500	5,814	88
,,	A 4.2	72·00	3·00	2·94	8·82	49,000	5,556	
,,	B 12.1	72·75	2·90	2 82	8·17	52·250	6,389	873
,, §	B 12.2	70·68	2·00	2·00	4·00	18,187	4,547	
Smooth Top, Stringy Bark	I 1	72·00	2·00	1·93	3·86	12,500	3,238	242
,,	I 2	72·00	2·00	2·00	4·00	12,800	3,200	
Stringy Bark, or Victorian Messmate	S 1	72·00	2·00	2·00	4 00	15,000	3,750	242
,,	S 2	72 00	2·00	2·00	4·00	14,075	3,519	
Messmate	P 6.1	71·75	2·91	2·91	8·46	71,000	8,384	864
,,	P 6.2	70·68	2·00	2·00	4·00	22,425	5,606	
,,	B 20.1	72 50	2·62	2·62	6·86	41,750	6,082	876
,,	B 20.2	70·75	2·00	2·00	4·00	17,687	4,922	
Brush, or White Box	P 10.1	71·75	2·80	2·82	7·89	36,800	4,661	872
,,	P 10.2	70·75	2·00	2·00	4·00	14,050	3,513	
,,	B 9.1	71·87	2·82	2·81	7·92	53,750	6,783	873
,,	B 9 2	70 75	2·00	2·00	4·00	20,687	5,172	

* Very green.
† Bad specimens. Worm-eaten and gum veins.
‡ Longitudinal gum veins and cracks.
§ Broke through knot.

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TABLE No. 7.—Compressive strength of New South Wales Timbers—*continued.*

Local Name.	Number and Letters.	Size of Specimen in Inches.			Area in Square Inches.	Total Breaking Load in lbs.	Breaking Load in lbs. per Sq. Inch.	No. of Days Seasoning.
		Length.	Breadth.	Thickness.				
Grey Box	D 2.1	71·20	2 83	2·79	8 01	56,500	7,054	807
,,	D 2.2	71·50	2·83	2·79	8·01	59,000	7,363	
Bloodwood	P 9.1	71·62	2 84	2·90	8·23	63,500	7,710	872
,,	P 9.2	70·75	2·00	2·00	4·00	25,750	6,438	
,, *	B 13 1	72·12	2·82	2·83	7·98	50,300	6.303	872
,,	B 13.2	70·75	2·00	2 00	4·00	15,625	3,906	
Blackwood	B 21.1	72·37	3·00	2·90	8·70	51,300	5,887	876
,,	B 21.2	70·68	2·00	2·00	4 00	15,950	3,975	
,,	B 8.1	71·50	3·00	3·08	9·24	66,500	7,197	30
,,	B 8.2	71·40	3·12	3·00	9 36	48,500	5,182	
Forest Oak	P 13.1	71·37	2·64	2·80	7·39	53,000	7,170	875
,,	P 13.2	70·68	2·00	2·00	4·00	20,250	5,062	
,,	A 1.1	71·60	3·01	3·04	9·15	66,000	7,213	87
,,	A 1.2	72·10	3·05	2·93	8 94	65,500	7,327	72
Turpentine	B 23.1	70·87	2·70	2·82	7·61	46,600	6,120	888
,,	B 23.2	70·75	2·00	2·00	4·00	20,125	5,031	
,,	P 3.1	71·50	2·60	2·71	7·04	43,000	6,103	867
,,	P 3.2	70·62	2·00	2·00	4·00	18,125	4,531	
,,	A 2.1	72·20	3·02	2·98	9·00	44,000	4,889	90
,,	A 2.2	72·00	3·00	3·00	9 00	44,500	4,944	
Pine	C 7.94	60·25	2·90	2·94	8·52	49,000	5,751	552
,,	C 7.95	60·37	2·95	2·97	8·88	51,000	5,750	
,,	D 3.1	71·40	2·85	2 78	7·92	36,500	4,609	92
,,	D 3.2	71·50	2·80	2·78	7·78	34,000	4,370	
Hoop, or Moreton Bay Pine	P 17.1	72·75	2·74	2·72	7·45	35,100	4,710	885
,,	P 17.2	70·75	2·00	2·00	4·00	13,675	3,419	
Rosewood	P 16.1	71·62	2·92	3·00	8·76	44,100	5,034	864
,,	P 16.2	70·75	2·00	2·00	4·00	16,500	4,125	
,,	D 5.1	71·40	2·77	2 82	7·81	40,500	5,186	93
,,	D 5.2	71·50	2·83	2·77	7 84	42,000	5,357	
Cosch Wood, or Leather Jacket	P 14.1	71·62	2·83	2·81	7·95	33,300	4,187	865
,,	P 14.2	70·68	2.00	2·00	4·00	14,550	3,638	
,, †	B 24.1	71·75	2·84	2·84	8·06	31,000	3,843	818
,,	B 24 2	70·68	2·00	2·00	4·00	13,125	3,281	
Black Bean	C 1.4	60·63	2·90	2·90	8·41	46,250	5,500	566
,,	C 1.5	60·35	3·00	3·05	9·15	42,750	4,672	
Red Bean ‡	C 2.19	60·15	2·95	2·93	8·64	20,750	2,400	566
,, §	C 2.20	60·25	2·90	2·85	8·26	18,250	2,209	
White Beech	P 15·1	71·62	2·91	2·91	8·46	37,250	4,399	864
,,	P 15.2	70·75	2·00	2 00	4·00	14,200	3,550	
Beech, or Negro Head	P 18.1	72·62	2·82	2·72	7·67	30,250	3,944	885
,,	P 18·2	70·75	2·00	2·00	4·00	18,062	4,516	
Teak	F 6.1	72·00	2·82	2·90	8·18	43,500	5,318	—
,,	F 6.2	72·20	2·92	2·92	8·53	51,000	5,979	
Red Cedar	P 19.1	72·25	2·93	2 92	8·55	17,500	2,045	885
,,	P 19.2	70·62	2·00	2 00	4·00	3,875	969	

* Sheared along gum vein. † Broke at knot in centre. ‡ Faulty. § Very faulty.

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TABLE No. 7.—Compressive strength of Victorian, South Australian, Western Australian, and Queensland timbers.

Local Name.	Number and Letter.	Size of Specimen in Inches.			Area in Square Inches.	Total Breaking Load in lbs.	Breaking Load in lbs. per Sq. Inch.	No. of Days Seasoning.
		Length.	Breadth.	Thickness.				
VICTORIAN.								
Blue Gum	M 1.1	71·00	2·83	2·81	7·95	43,700	5,495	591
"	M 1.2	70·75	2·00	2·00	4·00	20,438	5,210	
Mountain Ash	M 2.1	72·25	2·74	2·83	7·75	47,100	6,074	537
" *	M 2.2	70·68	2·00	2·00	4·00	17,550	4,388	
Red Gum†	M 3.1	71·37	2·80	2·82	7·89	36,200	4,585	515
"	M 3.2	70·68	2·00	2·00	4·00	13,300	3,325	
Blackwood	BV 1	72·25	2·62	2·73	7·15	27,900	3,901	693
"	BV 2	70·68	2·00	2·00	4·00	14,500	3,625	
Mahogany	MV 1	72·00	2·73	2·82	7·69	38,500	5,001	693
"	MV 2	70·75	2·00	2·00	4·00	21,050	5,263	
SOUTH AUSTRALIAN.								
Sugar Gum	SA 1.1	71·56	2·92	2·91	8·49	26,000	3,060	689
"	SA 1.2	.....	...	Specimen useless.			...	
Box	SA 2.1	71·59	2·90	2·88	8·35	41,500	4,969	724
"	SA 2.2	.....	...	Specimen useless.			...	
Blue Gum	SA 3.1	72·06	2·91	2·89	8·40	43,000	5,113	815
"	SA 3.2	70·21	2·91	2·85	8·39	42,750	5,092	
Red Gum	SA 4.1	71·46	2·89	2·81	8·12	25,000	3,078	694
"	SA 4.2	.....	...	Specimen useless.			...	
WESTERN AUSTRALIAN.								
Jarrah‡	MCD 1.1	72·00	2·72	2·80	7·61	19,300	2,534	613
"	MCD 1.2	70·75	2·00	2·00	4·00	14,062	3,516	
"	MCD 4.1	72·75	2·81	2·73	7·74	38,750	5,006	699
"	MCD 4.2	70·75	2·00	2·00	4·00	17,825	4,456	
Red Gum	MCD 2.1	72·25	2·82	2·74	7·72	27,000	3,494	611
"	MCD 2.2	70·75	2·00	2·00	4·00	13,750	3,438	
Karri	MCD 3.1	72·00	2·74	2·82	7·72	40,100	5,190	571
"	MCD 3.2	70·75	2·00	2·00	4·00	16,050	4,013	
§Jarrah**	No. 1 B 1	71·53	2·71	2·71	7·34	31,150	4,242	203
‖ "	No. 1 B 2	71·63	2·71	2·71	7·34	38,250	5,208	203
¶Karri**	D 1.1.K	72·95	2·98	2·97	8·85	42,500	4,802	...
" ††	D 1.2.K	73·26	3·03	2·92	8·84	37,200	4,204	...
QUEENSLAND.								
Ironbark	A 1	72·12	2·72	2·71	7·37	46,100	6,255	236
"	A 2	70·68	2·00	2·00	4·00	17,312	4,328	
Spotted Gum	C 1	72·12	2·72	2·70	7·34	57,500	7,829	448
"	C 2	70·75	2·00	2·00	4·00	21,300	5,325	
Tallow-wood	D 1	71·87	2·72	2·72	7·39	39,000	5,271	324
"	D 2	70·75	2·00	2·00	4·00	16,275	4,069	
Blood-wood ‡‡	F 1	72·25	2·72	2·43	6·60	18,500	2,799	446
" §§	F 2	72·12	2·44	2·72	6·63	17,100	2,577	
Turpentine	G 1	71·75	2·72	2·60	7·07	48,200	6,816	265
"	G 2	70·75	2·00	2·00	4·00	21,689	5,422	

* Broke through knot. † Gum veins. ‡ Longitudinal gum veins. § Slight gum veins. ‖ Sound timber. ¶ Worm-eaten near centre, and small weather cracks. ** These specimens of Jarrah and Karri were tested as a check on the results given by the specimens M.C.D. †† Gum vein near centre, and small weather cracks. ‡‡ Knotty and gum veins. Bad specimen. §§ Worm-eaten and knotty. Bad specimen.

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TABLE No. 8.—Tensile strength of New South Wales timbers.

Local Name.	Number and Letter.	Diameter of Specimen in Inches.	Area in Square Inches.	Total Breaking Load in lbs.	Breaking Load in lbs. per Sq. Inch.	No. of Days Seasoning.
Red Ironbark	B 2.1	·940	·6940	14,000	20,173	124
,,	B 2.2	·950	·7088	13,500	19,046	
,,	P 4.1	·483	·1832	3.725	20,329	707
,,	P 4.2	·475	·1772	4,150	23,362	
,, *	B 16.1	·490	·1886	3,400	18,030	727
,, *	B 16.2	·480	·1810	3,065	16,937	
Black Ironbark†	L 2	·740	·4300	3,575	8,312	330
Grey Ironbark	B 1.1	·960	·7238	18,650	25,767	200
,,	B 1.2	·980	·7543	18,400	24,394	
,,	B 17.1	·488	·1867	4,500	24,109	727
,,	B 17.2	·480	·1810	4,500	24,857	
White Ironbark	D 1.1	·600	·2827	2,500	8,843	45
,,	D 1.2	·530	·2206	2,400	10,879	
,,	P 5.1	·410	·1320	2,238	16,947	708
,,	P 5 2	·460	·1662	1,965	11,803	
Tallow-wood‡	P 2.1	·482	·1824	1,800	9,873	707
,,	P 2.2	·468	·1717	3,725	21,701	
,,	M 1.1	·970	·7390	5,000	6,766	56
,,	M 1.2	·980	·7540	7,400	9,815	
,,	F 3.1	·488	·1870	3,000	16,043	260
,,	F 3.2	·545	·2333	3,800	16,288	
Blackbutt §	B 22.1	·490	·1886	5,400	28,636	734
,, ‖	B 22.2	·475	·1772	3,750	21,161	
,,	P 1.1	·465	·1694	3,837	22,600	705
,,	P 1.2	·450	·1590	4,474	28,131	
,,	M 3.1	·970	·7390	10,500	14,208	56
,,	M 3.2	1·000	·7854	7,500	9,554	
,,	B 4.1	·900	·6362	14,075	22,124	243
,,	B 4.2	·980	·7543	14,775	19,588	
,,	F 1.1	·500	·1963	4,600	23,403	257
,,	F 1.2	·508	·2026	4,400	21,718	
Spotted Gum	C 4.57	·450	·1590	1,725	10,849	555
,,	C 4.58	·480	·1810	4,050	22,381	
,,	B 14·1	·475	·1772	3,725	21,021	727
,,	B 14.2	·454	·1619	3,050	18,847	
,,	M 2.1	·970	·7390	10,500	14,208	55
,,	M 2 2	·910	·6500	10,000	15,385	
,,	B 3.1	·990	·7698	9,000	11,691	333
,,	B 3 2	·980	·7543	12,925	17,135	
Red Gum	B 11.1	·455	·1626	2,612	16,064	727
,,	B 11.2	·466	·1707	2,500	14,645	
,,	C 6.88	·470	·1735	1,760	10,145	555
,,	3M 1	·900	·6362	5,900	9,274	275
,,	3M 2	·910	·6504	5,525	8,495	
Flooded Gum	P 8.1	·487	·1869	4,475	23.408	705
,,	P 8.2	·457	·1643	3,625	19,626	
,,	F 5.1	·510	·2043	3,450	16,886	290
,,	F 5.2	·492	·1901	2,450	12,888	

* Cross-grained at fracture. † Broke at knot. ‡ Crooked grain.
§ Straight grain. ‖ Not straight grained.

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TABLE No. 8.—Tensile strength of New South Wales timbers—*continued.*

Local Name.	Number and Letter.	Diameter of Specimen in Inches.	Area in Square Inches.	Total Breaking Load in lbs.	Breaking Load in lbs. per Sq. Inch.	No. of Days Seasoning.
Flooded Gum	A 3.1	·486	·1855	3,450	18,598	30
,,	A 3.2	·524	·2156	3,300	15,306	
Grey Gum	P 7.1	·488	·1871	3,050	16,300	708
,,	P 7.2	·467	·1713	3,275	19,118	
,,	F 4.1	·493	·1909	3,750	19,644	291
,,	F 4.2	·516	·2091	4,620	22,000	
Slaty Gum*	L 1	·720	·4072	6,125	15,043	252
Ribbon Gum	K 1	·720	·4072	6,200	15,228	119
,,	K 2	·660	·3421	3,100	9,061	
Mountain Gum	B 19.1	·460	·1662	1,675	10,079	723
,,	B 19.2	·460	·1662	2,050	11,117	
Grey Gum or Mountain Gum	J 1	·640	·3217	5,120	15,916	119
,, ,,	J 2	·750	·4412	7,450	16,864	
Woollybutt	B 15.1	·480	·1810	4,050	27,907	727
,, †	B 15.2	·455	·1626	1,450	8,917	
,,	B 5.1	·990	·7698	15,375	19,973	243
,,	B 5.2	·960	·7238	14,450	19,964	
Mahogany	F 2.1	·510	·2043	4,000	19,579	291
,,	F 2.2	·496	·1932	3,850	19,928	
Forest Mahogany	P 11.1	·470	·1735	4,970	28,604	703
,,	P 11.2	·477	·1790	4,400	24,581	
,,	D 4.1	·510	·2043	2,850	13,950	31
,,	D 4.2	·540	·2290	3,270	14,279	
Swamp Mahogany	B 10.1	·478	·1791	3,275	18,284	727
,,	B 10.2	·470	·1735	2,325	13,900	
,,	P 12.1	·460	·1662	1,950	11,733	703
,,	B 6.1	·510	·2043	4,250	20,803	30
,,	B 6.2	·510	·2043	2,500	12,237	
Mountain Ash	C 3.42	·470	·1735	3,075	17,720	569
,,	C 3.43	·410	·1320	3,775	28,592	
,, ‡	B 18.1	·445	·1555	2,225	14,305	722
,,	B 7·1	·510	·2043	5,300	25,942	44
,,	B 7.2	·520	·2124	2,550	12,006	
Stringybark	A 4.1	·488	·1870	3,350	17,914	28
,,	A 4.2	·452	·1604	3,350	20,885	
,,	C 5.72	·500	·1964	2,188	11,140	555
,,	C 5.73	·480	·1810	2,937	16,232	
Smooth Top Stringybark	I 1	·700	·3849	6,160	16,006	119
,, ,, §	I 2	·700	·3849	6,480	16,838	
Messmate	P 6.1	·480	·1810	3,125	17,269	702
,,	P 6.2	·478	·1796	2,675	14,893	
Stringybark or Victorian Messmate‖	S 1	·750	·4418	6,370	14,419	242
,, ,, ¶	S 2	·750	·4418	6,250	14,375	
Brush or White Box	P 10.1	·460	·1662	2,200	13,236	700
,, ,,	P 10.2	·485	·1848	1,225	6,630	

* Sound, straight grain.
§ Very green.
† Cross-grained at fracture.
‖ Split longitudinally.
‡ Slight shakes in specimen.
¶ Broke in a long fracture.

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TABLE No. 8.—Tensile strength of New South Wales timbers—*continued.*

Local Name.	Number and Letter.	Diameter of Specimen in Inches.	Area in Square Inches.	Total Breaking Load in lbs.	Breaking Load in lbs. per Sq. Inch.	No. of days Seasoning.
Grey Box	B 9.1	·480	·1810	3,775	20,861	719
,,	D 2.1	·500	·1963	4,600	23,434	747
,,	D 2.2	·540	·2290	4,900	21,397	762
Bloodwood*	P 9.1	·500	·1963	3,975	20,247	700
,, *	P 9.2	·470	·1735	3,488	20,102	
,,	B 13.1	·467	·1724	3,250	18,856	719
,, †	B 13.2	·465	·1698	1,250	7,367	
Blackwood‡	B 21.1	·485	·1848	2,875	15,561	723
,, §	B 21.2	·482	·1821	2,862	15,718	
,,	B 8.1	·520	·2124	3,500	16,478	42
,,	B 8.2	·530	·2206	4,300	19,492	
,,	B 8.3	·530	·2206	2 600	11,780	42
,,	B 8.4	·550	·2376	2,800	11,785	
Forest Oak	P 13.1	·445	·1555	2,750	17,681	701
,,	P 13.2	·417	·1366	2,352	17,294	
Forest Oak	A 0.1	·545	·2333	4,550	19,503	27
,,	A 0.2	·523	·2148	3,150	14,711	12
,,	A 1.1	·537	·2265	3,000	13,245	27
Turpentine‖	B 23.1	·467	·1724	2,150	12,474	734
,,	B23.2	·480	·1810	4,162	23,000	
,,	P 3.1	·467	·1724	3,110	18,115	705
,,	P 3.2	·485	·1848	3,675	19,891	
,,	A 2.1	·487	·1863	3,150	16,908	30
,,	A 2.2	·478	·1794	3,000	16,734	
Pine	C7.102	·490	·1886	3,770	20,003	555
,,	C7.103	·440	·1521	3,488	22,608	
,,	D 3.1	·510	·2043	3,900	19,090	47
,,	D 3.2	·520	·2124	2,700	12,712	
Hoop, or Moreton Bay Pine	P 17.1	·450	·1590	900	5,709	733
,, ,,	P 17.2	·445	·1555	1,625	10,448	
Rosewood	P 16.1	·465	·1694	2 975	17,519	706
,,	P 16.2	·495	·1924	3,435	17,840	
,,	D 5.1	·520	·2124	2,800	13,183	48
,,	D 5.2	·540	·2290	3,200	13,974	
Coachwood	P 14.1	·465	·1698	1,750	10,305	706
,,	P 14.2	·440	·1521	2,150	14,140	
,,	B 24.1	·470	·1735	2,700	15,563	694
,,	B 24.2	·455	·1626	1,850	11,377	
Black Bean	C 1.12	·460	·1662	1,800	10,831	483
,,	C 1.13	·475	·1772	1,400	7,900	
Red Bean¶	C 2.27	·475	·1772	.....	.....	483
,,	C 2.28	·490	·1886	775	4,109	569
White Beach	P 15.1	·440	·1521	1,550	10,194	706
,,	P 15.2	·460	·1662	1,275	7,684	
Beech or Negro Head	P 18.1	·470	·1735	3,550	20,468	733
Teak	F 6.1	·492	·1901	5,350	28,143	...
,,	F 6.2	·479	·1802	2,900	16,093	
,,	F 6.3	·496	·1932	4,850	25,104	

* Gum veins. † Worm-eaten where broken. ‡ Broke at end in clip.
§ Worm-holes. ‖ Cross-grain. ¶ Failed.

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TABLE No. 8.—Tensile Strength of Victorian, South Australian, Western Australian, and Queensland timbers.

Local Name.	Number and Letter.	Diameter of Specimen.	Area in Sq. Inches.	Total Breaking Load in lbs.	Breaking Load in lbs. per Sq. Inch.	No. of days Seasoning.
VICTORIAN.						
Blackwood	BV 2	·517	·2098	3,475	16,553	520
Mahogany	MV 1	·512	·2059	3,750	18,214	
"	MV 2	·512	·2059	3,425	16,636	
Blue Gum	M 1.1	·410	·1320	3,625	27,456	
"	M 1.2	·440	·1521	3,840	25,255	
Mountain Ash	M 2.1	·475	·1772	4,100	23,146	
" ††	M 2.2	·430	·1452	400	.....	
Red Gum	M 3.1	·480	·1810	1,450	8,012	
"	M 3.2	·475	·1772	1,510	8,504	
SOUTH AUSTRALIAN.						
Sugar Gum	SA 1·1	·510	·2043	2,500	12,237	690
"	SA 1.2	·490	·1886	1,775	9,412	
Box	SA 2.1	·510	·2043	1,400	6,853	710
" *	SA 2.2	.....	.....	.....	.....	
Blue Gum	SA 3.1	·470	·1735	1,875	10,808	741
" *	SA 3.2	.....	.....	.....	.....	
Red Gum †	SA 4.1	·520	·2124	950	4,472	765
" †	SA 4.2	·490	·1886	1,700	9,015	
WESTERN AUSTRALIAN.						
Jarrah	MCD 1.1	·480	·1810	3,262	18,026	463
"	MCD 1.2	·470	·1735	3,000	17,292	
"	MCD 4.1	·490	·1886	2,200	11,672	562
"	MCD 4.2	·480	·1810	3,112	17,197	
Red Gum	MCD 2.1	·475	·1772	4,037	22,725	463
Karri	MCD 3.1	·490	·1886	2,625	13,920	429
QUEENSLAND.						
Ironbark	A 1	·740	·4301	5,183	12,053	266
"	A 2	·720	·4072	2,520	6,191	
Spotted Gum	C 1	·720	·4072	6,320	15,528	479
" ‡	C 2	·700	·3849	7,810	20,286	
Tallow-wood §	D 1	·710	·3960	.....	.....	346
" ‖	D 2	·700	·3849	2,620	6,805	
Bloodwood ¶	F 1	·740	·4301	3,070	7,139	479
" **	F 2	·700	·3849	3,260	8,467	
Turpentine ‡	G 1	·710	·3960	8,175	20,646	297
" ‡	G 2	·700	·3849	7,575	19,675	

* Specimen useless. † Bad specimen. ‡ Straight grain. § Failure, broke at knot.
‖ Worm-eaten and cracked. ¶ Cross-grained. ** Broke at knot. †† Numerous worm-holes

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TABLE No. 9.—Shearing strength of New South Wales timbers.

Local Name.	Number and Letter.	Size of Specimen in Inches.			Area of Section in Square Inches.	Total Breaking Load in lbs.	Breaking Load in lbs. per Sq. Inch.	No. of days Seasoning.
		Length.	Breadth.	Depth.				
Red Ironbark	B 2.1	6·00	5·90	2·00	11·800	26,000	2,203	214
,,	B 2.2	6·00	5·90	2·00	11·800	21,500	1,822	227
,,	B 16.1	6·00	5·78	2·00	11·560	25,250	2,184	944
,,	B 16.2	6·00	5·75	2·00	11·500	24,575	2,137	
,,	P 4.1	6·00	5·70	2·22	12·654	26,100	2,062	929
,,	P 4.2	6·00	5·70	2·22	12·654	30,125	2,380	
Black Ironbark	L 2.1	6·00	6·00	2·13	12·780	28,000	2,253	367
,,	L 2.2	6·00	5·94	2·13	12·652	26,150	2,063	
ey Ironbark	B 1.1	6·00	6·00	2·00	12·000	26,500	2,208	303
,,	B 1.2	6·00	6·00	2·00	12·000	26,000	2,166	
,,	B 17.1	6·00	5·61	1·80	10·098	21,250	2,104	944
,,	B 17.2	6·00	5·72	1·84	10·525	23,375	2,220	
White Ironbark	P 5.1	6·00	5·63	2·20	12·386	30,400	2,455	910
,,	P 5.2	6·00	5·63	2·20	12·386	30,000	2,422	
,,	D 1.1	6·00	5·90	2·16	12·744	30,000	2,362	114
,,	D 1.2	6·00	6·10	2.10	12·810	20,000	1,586	
Tallow Wood	P 2.1	6·00	5·62	2·11	11·858	26,100	2,209	909
,,	P 2.2	6·00	5·73	2·11	12·090	22,500	1,870	
,,	M 1.1	6·00	6·00	3·00	18·000	21,500	1,194	283
,,	M 1.2	6·00	3·00	3·00	9·000	9,200	1,122	
,,	F 3.1	6·00	5·95	2·05	12·197	23,000	1,885	354
,,	F 3.2	6·00	5·90	2·02	11·918	20,500	1,719	
Blackbutt	B 22.1	6·00	5·71	2·12	12·105	24,850	2,053	950
,,	B 22.2	6·00	5·70	2·12	12·084	22,400	1,190	
,,	P 1.1	6·00	5·72	2·11	12·069	27,550	2,282	927
,,	P 1.2	6·00	5·71	2·11	12·048	26,125	2,168	
,,	M 3.1	6·00	6·00	3·00	18·000	30,000	1,666	233
,,	B 4.1	6·00	6·00	2·00	12·000	20,000	1,666	165
,,	B 4.2	6·00	6·00	2·00	12·000	21,000	1,750	
,,	F 1.1	6·00	5·95	2·00	11·900	23,000	1,932	345
,,	F 1.2	6·00	5·95	2·00	11·900	20,000	1,680	
Spotted Gum	C 4.1	6·00	5·70	2·00	11·400	29,250	2,562	924
,,	C 4.2	6·00	5·62	2·00	11·240	28,875	2,569	
,,	B 14.1	6·00	5·62	2·00	11·240	23,875	2,124	944
,,	B 14.2	6·00	5·62	2·00	11·240	22,125	1,976	
,,	M 2.1	6·00	6·00	3·00	18·000	29,500	1,639	282
,,	B 3.1	6·00	6·00	2·00	12·000	20,000	1,666	416
,,	B 3.2	6·00	6·00	2·00	12·000	18,000	1,500	
Gum	C 6.1	6·00	5·70	2·00	11·400	26,500	2,325	925
,,	C 6.2	6·00	5·72	2·00	11·440	21,900	1,901	
,,	B 11.1	6·00	5·80	2·03	11·774	25,000	2,124	945
,,	B 11.2	6·00	5·80	2·03	11·774	21,250	1,805	
,,	M 123.1	6·00	5·90	2·05	12·095	27,500	2,274	361
,,	M 123.2	6·00	5·90	2·15	12·685	25,900	1,972	
Flooded Gum	P 8.1	6·00	5·70	1·92	10·944	23,500	2,148	927
,,	P 8.2	6·00	5·60	1·92	10·752	22,100	2,055	
,,	A 3.1	6·00	5·95	2·02	12·019	19,000	1,580	118
,,	A 3.2	6·00	5·95	2·02	12·019	18,500	1,539	
,,	F 5.1	6·00	5·90	2·10	12·390	28,000	2,259	395
,,	F 5.2	6·00	5·90	2·10	12·390	21,000	1,694	
Grey Gum	P 7.1	6·00	5·70	2·12	12·084	23,250	1,921	930
,,	P 7.2	6·00	5·70	2·12	12·084	26,150	2,161	
,,	F 4.1	6·00	5·90	2·00	11·800	18,500	1,567	390
,,	F 4.2	6·00	5.90	2·00	11·800	17,000	1,440	

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TABLE No. 9.—Shearing strength of New South Wales timbers—*continued.*

Local Name.	Number and Letter.	Size of Specimen in Inches.			Area of Section in square Inches.	Total Breaking Load in lbs.	Breaking Load in lbs. per Sq. Inch.	No. of Days Seasoning.
		Length.	Breadth.	Depth.				
Slaty Gum	L 1.1	6·00	5·93	2·24	13·283	24,250	1,826	289
,,	L 1.2	6·00	5·93	2·24	13·283	23,875	1,797	
Ribbon Gum*	K 1	6·00	5·90	2·90	17·110	22,600	1,320	240
,,	K 2	6·00	5·96	2·90	17·294	23,200	1,341	
Mountain Gum	B 19.1	6·00	5·70	2·13	12 141	25,700	2,116	939
,,	B 19.2	6·00	5·62	2·13	11 910	13,500	2,037	
Grey Gum or Mountain Gum †	J 1	6·00	5·90	2·86	16·756	26·150	1,560	240
,,	J 2	6 00	5·94	2·82	16·750	29,250	1,745	
Woollybutt	B 15.1	6·00	5·71	2·02	11·534	19,000	1,643	944
,,	B 15.2	6·00	5·63	2·02	11·372	20,550	1,807	
,,	B 5.1	6·00	6·00	2 00	12·000	21,000	1,750	327
,,	B 5.2	6·00	6·00	2·00	12·000	20,500	1,703	
Mahogany	F 2.1	6 00	5·95	2·10	12·495	27,000	2,161	385
,,	F 2.2	6·00	5·90	2·10	12·390	25,500	2,059	
Forest Mahogany	P 11.1	6·00	5·62	2·04	11·465	20,250	1,776	925
,,	P 11.2	6·00	5·72	2·04	11·669	22,000	1,885	
,,	D 4.1	6 00	5·90	2·10	12·390	19,500	1,573	116
,,	D 4.2	6·00	6 00	2·08	12·480	20,500	1,642	
Swamp Mahogany	P 12.1	6·00	5·80	2 11	12·238	21,100	1,724	922
,, ‡	P 12.2	6·00	5·73	2·11	12·090	17,750	1,467	
,,	B 10.1	6·00	5·70	2 00	11·400	23,200	2,035	945
,,	B 10·2	6·00	5·64	2·00	11·280	20,625	1,828	
,,	B 6.1	6·00	6·00	2·00	12·000	14,000	1,166	118
,,	B 6.2	6·00	6·00	2·00	12·000	14,000	1,166	
Mountain Ash	B 18.1	6·00	5·60	2·03	11·368	28,650	2,520	939
,,	B 18.2	6·00	5·62	2·03	11·408	26,950	2,362	
,,	C 3.1	6·00	5·70	2·10	11·970	25,875	2,161	938
,,	C 3.2	6·00	5·60	2·10	11·760	23,625	2,009	
,,	B 7.1	6·00	6·00	2·00	12·000	21,000	1,750	115
,,	B 7.2	6·00	6·00	2·00	12·000	22,500	1,812	
Stringy Bark	C 5.1	6·00	5·70	2·00	11·400	29,500	2,590	925
,,	C 5.2	6·00	5·63	2·00	11·260	30,000	2,664	
,,	B 12.1	6·00	5·70	2·00	11·400	22,625	1,982	923
,,	B 12.2	6·00	5·70	2·00	11 400	26,000	2,280	
,,	A 4.1	6·00	5·95	2·00	11·900	23,000	1,932	116
,,	A 4.2	6·00	5·60	2·00	11·200	22,000	1,963	
Smooth-top Stringy Bark §	I 1	6·00	5·87	2·84	16·690	29,000	1,739	240
,,	I 2	6·00	5·80	2·76	16·008	25,000	1,562	
Messmate	P 6.1	6·00	5·63	2·11	11·879	14,500	1,220	924
,,	P 6.2	6·00	5·71	2·11	12·048	15,875	1,317	
,,	B 20.1	6·00	5·70	2·00	11·400	23,050	2,022	939
,,	B 20.2	6·00	5·70	2·00	11·400	25,000	2,193	
Stringy Bark or Victorian Messmate†	S 1	6·00	5·93	2·98	17·617	20,600	1,169	240
,,	S 2	6·00	5·90	2 91	17·177	20,050	1,164	
Brush or White Box	P 10.1	6·00	5·64	2·10	11·844	27,200	2,296	922
,,	P 10.2	6·00	5·64	2·10	11·844	23,500	1,984	
Grey Box	B 9.1	6·00	5·70	2·12	12·084	29,900	2,474	937
,,	B 9.2	6·00	5·60	2·12	11·872	27,600	2,325	
,,	D 2.1	6·00	6·00	2·00	12·000	20,000	1,666	832
,,	D 2.2	6·00	6·00	2·00	12·000	23,000	1,916	

* Very green, but sound. † All sound, but very green. ‡ Sheared along gum vein
§ Sound, but very green.

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TABLE No. 9.—Shearing strength of New South Wales timbers—*continued.*

Local Name.	Number and Letter.	Size of Specimen in Inches.			Area of Section in Square Inches.	Total Breaking Load in lbs.	Breaking Load in lbs. per Sq. Inch.	No of Days Seasoning.
		Length.	Breadth.	Depth.				
Bloodwood	B 13.1	6·00	5·70	2·02	11 514	21,250	1,845	936
,, *	B 13.2	6·00	5·70	2·02	11·514	12,500	1,085	
,,	P 9.1	6·00	5·71	2·20	12·562	28,200	2,252	941
,,	P 9.2	6·00	5·62	2·20	12 364	32,500	2,628	
Blackwood	B 21·1	6 00	5·63	2·03	11·429	31,500	2,756	939
,,	B 21.2	6·00	5·71	2·03	11 591	31,250	2,696	
,,	B 8.1	6·00	5·90	2·10	12·390	25,000	2,017	112
,,	B 8.2	6·00	5·90	2·40	14·160	29,000	2,049	
Forest Oak	P 13.1	6·00	5·70	2·12	12·084	19,550	1,618	920
,,	P 13.2	6·00	5·63	2·12	11·936	18,600	1,558	
,,	A0.A1.1	6·00	6·00	2·04	12·240	15,000	1,225	115
,,	A0.A1.2	6·00	6·00	2 04	12·240	19,000	1,552	100
Turpentine†	P 3.1	6·00	5·72	2·11	12 069	15,000	1,242	927
,,	P 3.2	6·00	5·72	2·01	11·493	24,400	2,123	
,,	B 23.1	6 00	5·74	2·00	11·480	22,350	1,950	950
,,	B 23.2	6·00	5·71	2·00	11·420	18,250	1,600	
,,	A 2.1	6·00	5·95	2·10	12·495	17,000	1,361	118
,,	A 2.2	6·00	6·00	2·00	12·000	18,500	1,541	
Pine	C 7.1	6·00	5·80	2·00	11·600	18,750	1,616	925
,,	C 7.2	6·00	5·70	2·00	11·400	20,100	1,760	
,,	D 3.1	6·00	5·90	2·06	12 154	16,000	1 316	117
,,	D 3.2	6·00	5·90	2·10	12 390	14,000	1,129	
Hoop, or Moreton Bay Pine	P 17.1	6·00	5 72	2·23	12·796	15,750	1,231	950
,,	P 17.2	6·00	5·74	2·23	12·800	15,450	1,207	
Rosewood	P 16.1	6·00	5·70	2·14	12·198	30,000	2,459	923
,,	P 16.2	6 00	5·70	2·14	12·198	27,400	2,254	
,,	D 5.1	6·00	5·90	2·10	12·390	21,500	1,735	118
,,	D 5.2	6·00	6·00	2·00	12·000	20,500	1,708	
Coach Wood or Leather Jacket	B 24.1	6·00	5·80	2·12	12·296	24,000	1,951	911
,,	B 24.2	6·00	5·71	2·12	12·105	25,000	2,066	
,,	P 14.1	6·00	5·62	2·10	11·807	21,600	1,838	925
,,	P 14.2	6·00	5·64	2·10	11·844	22,650	1,912	
Black Bean	C 1.1	6·00	5·62	2·12	11·914	27,450	2,304	937
,,	C 1.2	6·00	5·70	2·12	12·084	32,100	2,656	
Red Bean	C 2.1	6·00	5·70	2·10	11·970	27,900	2,330	937
,,	C 2.2	6·00	5·64	2·10	11·844	26,250	2,209	
White Beech	P 15.1	6·00	5·70	2·13	12·141	21,550	1,775	924
,,	P 15.2	6·00	5·63	2·13	11·992	20,000	1,668	
Beech, or Negro Head	P 18.1	6·00	5·70	2·21	12·597	16,300	1,216	951
,,	P 18.2	6·00	5·80	2·21	12·818	11,250	877	
Red Cedar	P 19.1	6·00	5·72	2·22	12·698	18,750	1,478	951
,,	P 19.2	6·00	5·72	2·22	12·698	18,375	1,448	
Teak	F 6.1	6·00	5·90	3 00	17 700	24,500	1,384	
,,	F 6.2	6·00	3·90	3·00	11·700	16,500	1,410	

* Sheared long gum vein. † Sheared along sun crack.

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TABLE No. 9.—Shearing strength of Victorian, South Australian, Western Australian, and Queensland timbers—*continued.*

Local Name.	Number and Letter.	Size of Specimen in Inches.			Area of Section in Square Inches.	Total Breaking Load in lbs.	Breaking Load in lbs. per Sq. Inch.	No. of Days Seasoning.
		Length.	Breadth.	Depth.				
VICTORIAN.								
Blackwood	BV 1	6·00	6·00	2·20	13·200	18,500	1,401	746
,,	BV 2	6·00	5·90	2·30	13·570	20,000	1,474	
Mahogany	MV 1	6·00	5·91	2·30	13·593	32,500	2,390	
,,	MV 2	6·00	5·92	2·30	13·646	30,050	2 202	
Blue Gum	M 1.1	6·00	5·70	1·93	11·001	22,500	2,046	
,,	M 1.2	6·00	5·80	1·93	11·194	21,250	1,900	
Mountain Gum	M 2.1	6·00	5·31	1·93	10·348	14,500	1,401	
,,	M 2.2	6·00	5·92	2 00	11·840	17,500	1,478	
Red Gum	M 3.1	6·00	5·32	1·93	10·167	16,900	1,662	
,,	M 3.2	6·00	5·73	2·00	11·860	16,150	1,364	
SOUTH AUSTRALIAN.								
*Sugar Gum	SA 1.1	6 00	5·70	2·90	16·530	35,575	2,152	1011
,, *	SA 1.2	6·00	5·71	2·90	16·559	36,300	2,192	
*Box	SA 2.1	6·00	5·82	2·90	16·958	32,375	1,909	1031
,, *	SA 2.2	6·00	5·80	2 82	16·356	40,625	2,483	
*Blue Gum	SA 3.1	6·00	6·00	2·91	17·460	34,450	1,973	1062
,, *	SA 3.2	6·00	6·00	2·90	17·400	33,750	1,940	
*Red Gum	SA 4.1	6·00	5·81	2·90	16·909	29,875	1,767	1001
,, *	SA 4.2	6·00	5·81	2·90	16·909	31,350	1,855	
WESTERN AUSTRALIAN.								
*Jarrah	MCD 1.1	6·00	5·80	2·73	15·834	29,250	1,847	681
,, *	MCD 1.2	6·00	5·72	2·73	15·615	27,850	1,783	
,, *	MCD 4.1	6·00	5·72	2·80	16 016	30,600	1,911	780
,, *	MCD 4.2	6·00	5·71	2·80	15·988	31,550	1,973	
*Red Gum	MCD 2.1	6·00	5·73	2·80	16·044	25,550	1,592	681
,, *	MCD 2.2	6·00	5·74	2·80	16·072	24,450	1,521	
*Karri	MCD 3.1	6·00	5·73	2·74	15·700	22,000	1,401	647
,, *	MCD 3.2	6·00	5·73	2·74	15·700	23,500	1,370	
,, †	D 6.1 K	6 00	5·81	2·12	12·317	23,720	1,926	
,, †	D 6.2 K	6·00	5·83	2·10	12·243	22,675	1,852	
QUEENSLAND.								
Ironbark	A 1	6·00	6·00	2·25	13·500	24,625	1,824	305
,,	A 2	6·00	6·00	2·25	13·500	19,625	1,454	
Spotted Gum	C 1	6·00	5·93	2·10	12·453	27,850	2,236	518
,,	C 2	6·00	6·00	2·10	12·600	27,550	2,186	
Tallow-wood	D 1	6·00	5·92	2·20	13·024	18,325	1,409	385
,,	D 2	6·00	6·00	2·20	13·200	20,600	1,548	
Bloodwood	F 1	6·00	6·00	2 23	13·380	19,150	1,431	518
,,	F 2	6·00	6·00	2·23	13·380	19,650	1,468	
Turpentine	G 1	6·00	5·94	2·32	13·780	29,625	2,150	336
,,	G 2	6·00	5·92	2·13	12·609	26,500	2,101	

* All good, sound timber. † Tested as a check on specimens MCD.

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TABLE No. 10.—Comparative strength of long and short columns of Australian timbers per square inch of sectional area.

Local Name.	Number and Letter.	Ratio of Length to Smallest Dimensions.		Modulus of Tranverse Elasticity.
		4 to 1.	36 to 1.	
NEW SOUTH WALES TIMBERS.				
Red Ironbark	P 4	12,013	8,338	3,084,333
,, ,,	B 16	12,308	6,250	2,658,433
Grey ,,	B 17	10,288	6,250	2,806,975
White ,,	P 5	11,239	6,625	3,037,400
Tallow-wood	P 2	9,511	5,169	2,745,333
Blackbutt	B 22	9,250	6,140	2,424,666
,,	P 1	10,204	5,875	2,514,100
Spotted Gum	B 14	8,406	5,250	2,386,833
Red ,,	B 11	9,842	5,000	2,197,076
Flooded ,,	P 8	9,618	6,259	2,196,696
Grey ,,	P 7	9,822	5,125	2,547,300
Ribbon ,,	K	5,572	2,790	1,400,566
Mountain ,,	B 19	7,940	4,531	1,766,233
Mountain Gum or Grey Gum	J	6,576	3,219	1,389,450
Woollybutt	B 15	7,355	4,975	2,070,833
Forest Mahogany	P 11	9,953	5,641	2,524,466
Swamp ,,	B 10	6,992	4,569	1,715,453
,, ,,	P 12	5,768	3,656	1,996,300
Mountain Ash	B 18	8,485	5,656	2,159,866
Stringy Bark	B 12	8,814	4,547	1,953,033
Smooth-topped Stringy Bark	I	5,699	3,219	1,616,866
Victorian Messmate	S	4,624	3,635	1,768,066
Messmate	P 6	8,605	5,606	2,233,600
,,	B 20	9,470	4,922	2,040,833
Brush, or White Box	P 10	7,083	3,513	1,990,600
,, ,, ,,	B 9	9,521	5,172	3,114,936
Bloodwood	P 9	11,116	6,438	2,185,533
,,	B 13	9,215	3,906	1,782,312
Blackwood	B 21	7,534	3,975	1,661,126
Forest Oak	P 13	10,227	5,062	2,577,713
Turpentine	B 23	9,885	5,031	2,001,166
,,	P 3	9,236	4,531	1,963,233
Hoop, or Moreton Bay Pine	P 17	5,284	3,419	1,341,633
Rosewood	P 16	7,587	4,125	1,705,033
Coach-wood	P 14	6,206	3,638	1,717,833
,,	B 24	5,484	3,281	1,438,400
White Beech	P 15	5,195	3,550	1,430,900
Beech, or Negro Head	P 18	5,427	4,516	1,645,633
Red Cedar	P 19	2,915	969	693,315
VICTORIAN TIMBERS.				
Blue Gum	M 1	8,993	5,210	1,747,783
Mountain Ash	M 2	7,575	4,388	2,026,046
Red Gum	M 3	7,579	3,325	1,373,542
Blackwood	B V	6,370	3,625	1,253,448
Mahogany	M V	8,098	5,263	1,507,366

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TABLE No. 10.—Comparative strength of long and short columns of Australian timbers per square inch of sectional area—*continued.*

Local Name.	Number and Letter.	Ratio of Length to Smallest Dimensions.		Modulus of Tranverse Elasticity.
		4 to 1.	36 to 1.	
WESTERN AUSTRALIAN TIMBERS.				
.....	MCD 1	5,960	3,516	1,300,775
,, ...	MCD 4	7,720	4,456	1,941,766
Red Gum	MCD 2	5,927	3,438	1,712,546
.....	MCD 3	7,132	4,013	1,707,326
QUEENSLAND TIMBERS.				
Ironbark	A	8,604	4,328	2,304,500
Spotted Gum	C	10,866	5,325	2,515,666
Tallow-wood	D	7,473	4,069	1,597,966
Turpentine	G	9,865	5,422	2,800,500

[Maps and diagrams.]

Sydney: Charles Potter, Government Printer.—1892.

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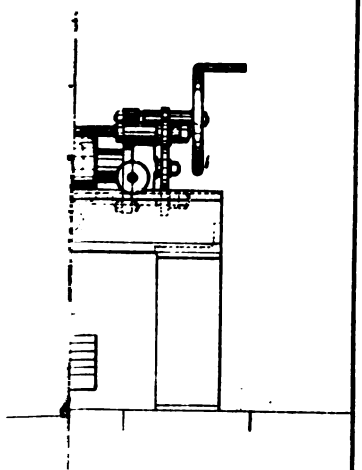
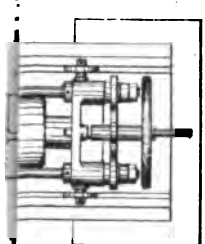
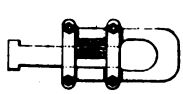
PLATE I





BEARING TESTS

ELEVATION



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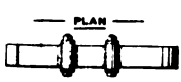

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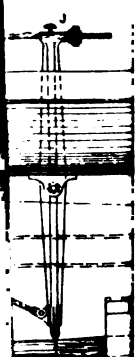

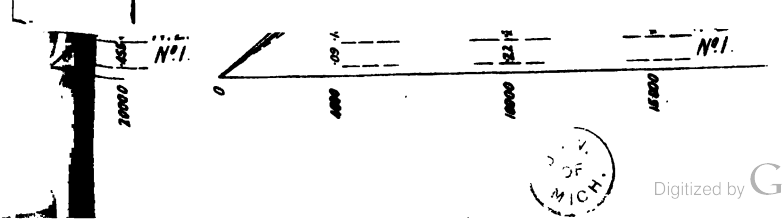

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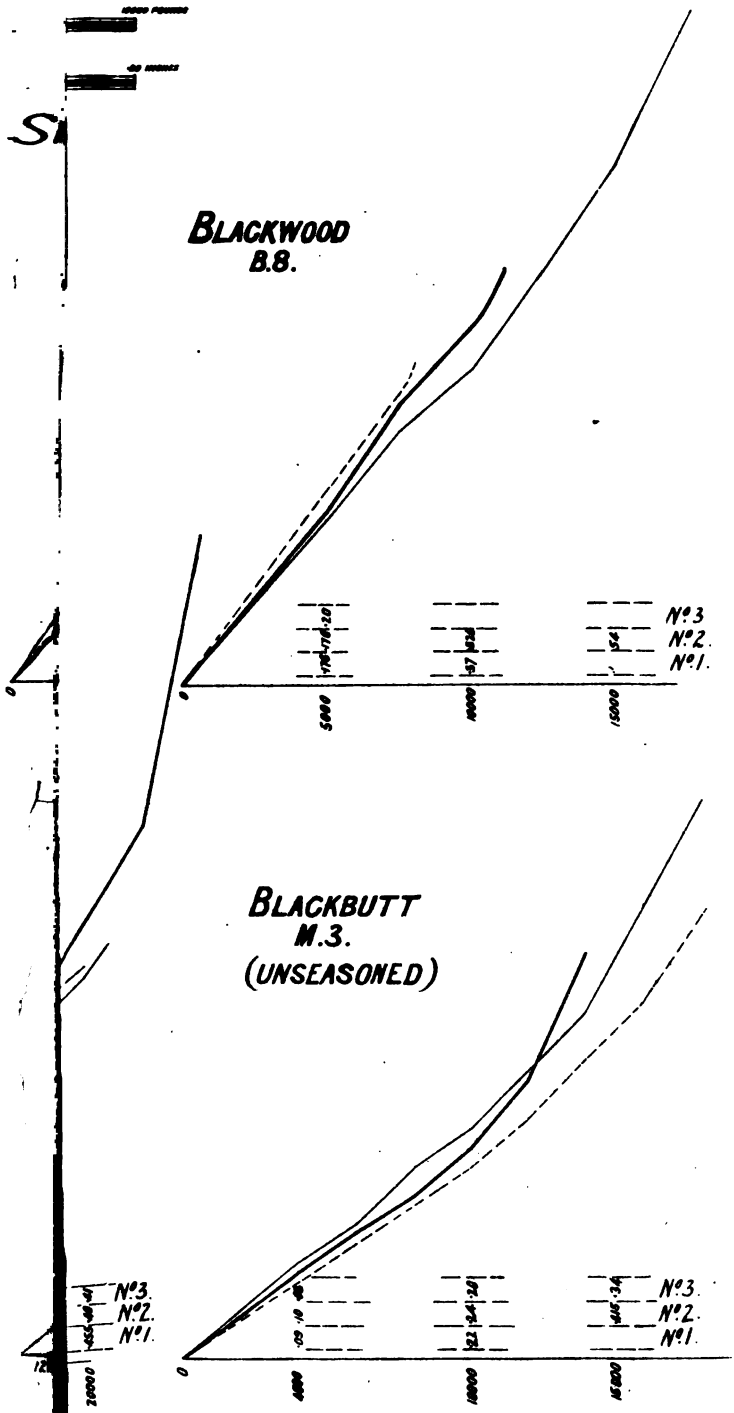

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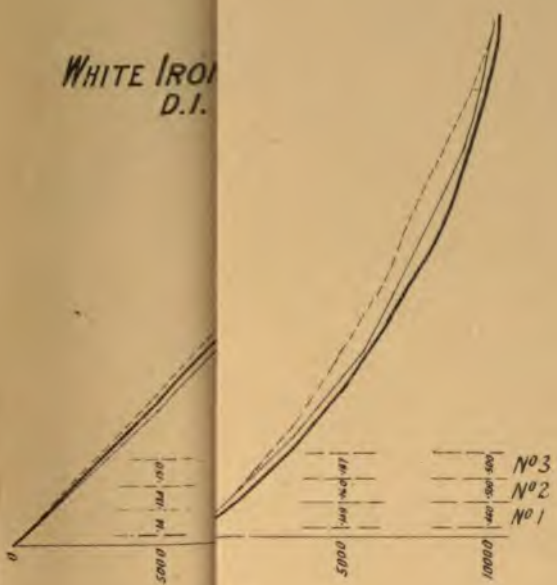
PLATE 5

Specimen Nº 1 she
" - 2
" - 3

WHITE IRO
D.I.



FOREST MAH WHITE BEECH
D.4. D.6.

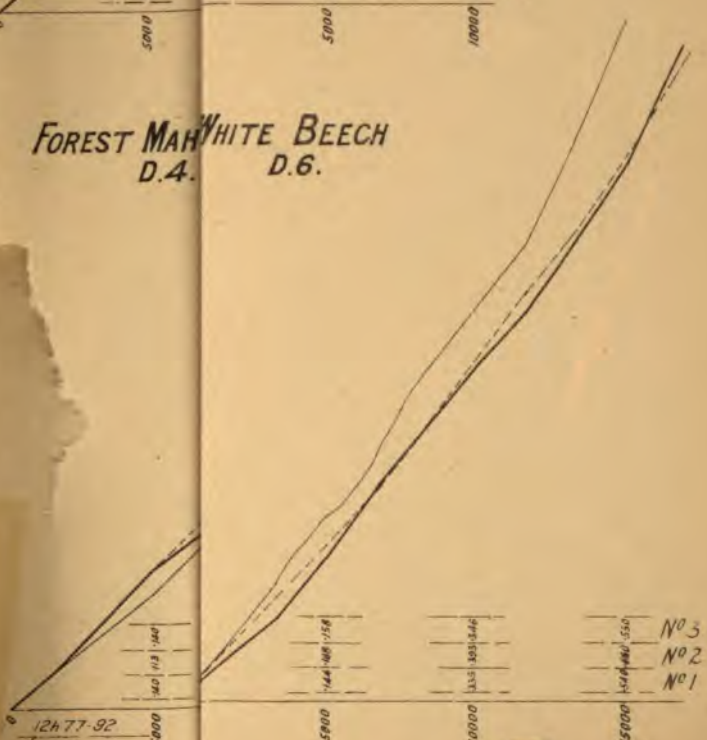


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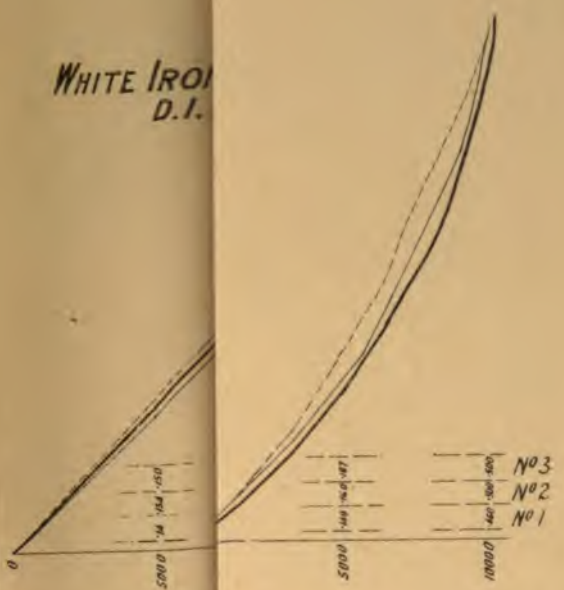
PLATE 5

Specimen Nº 1 sho
" 2
" 3

WHITE IRO
D.1.



FOREST MAH
D.4.

WHITE BEECH
D.6.

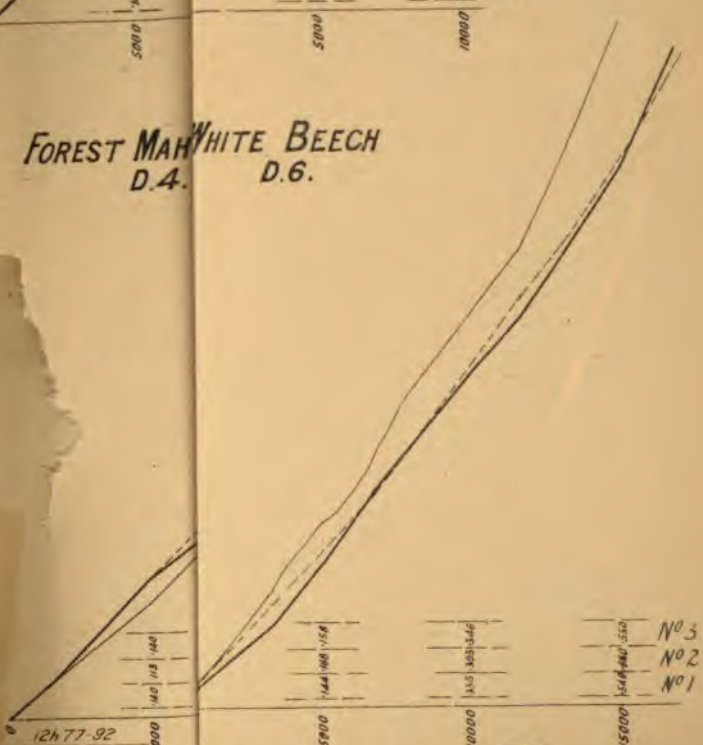


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PLATE 6

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PLATE 7

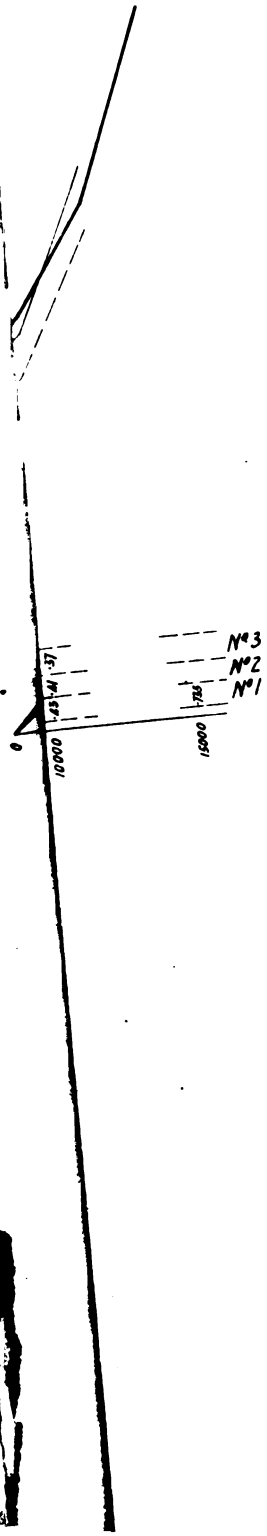

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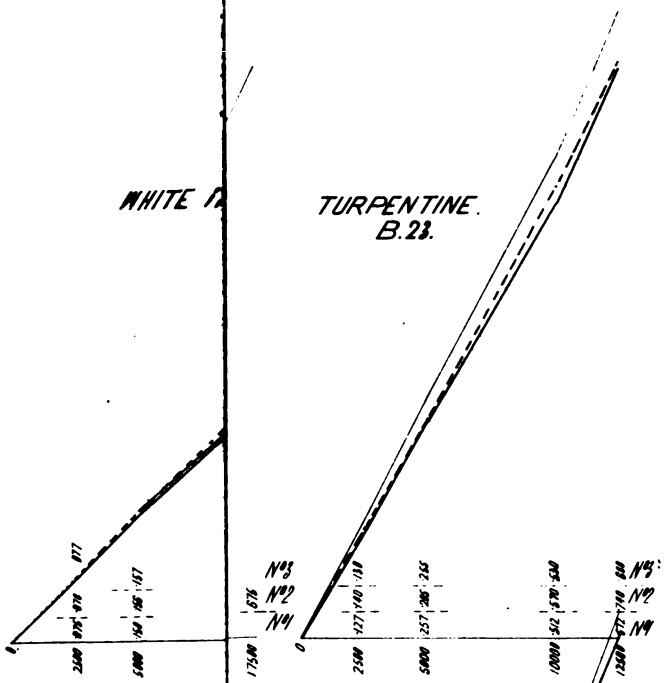
PLATE 8.

Spec

WHITE P

TURPENTINE.
B.23.



RED IRONBAR
B.16.

TURPENTINE
P.3.

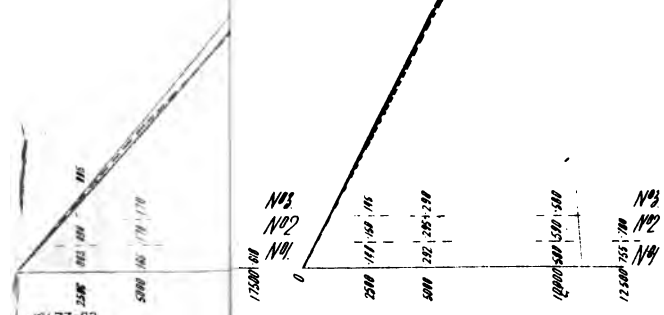


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PLATE 9.

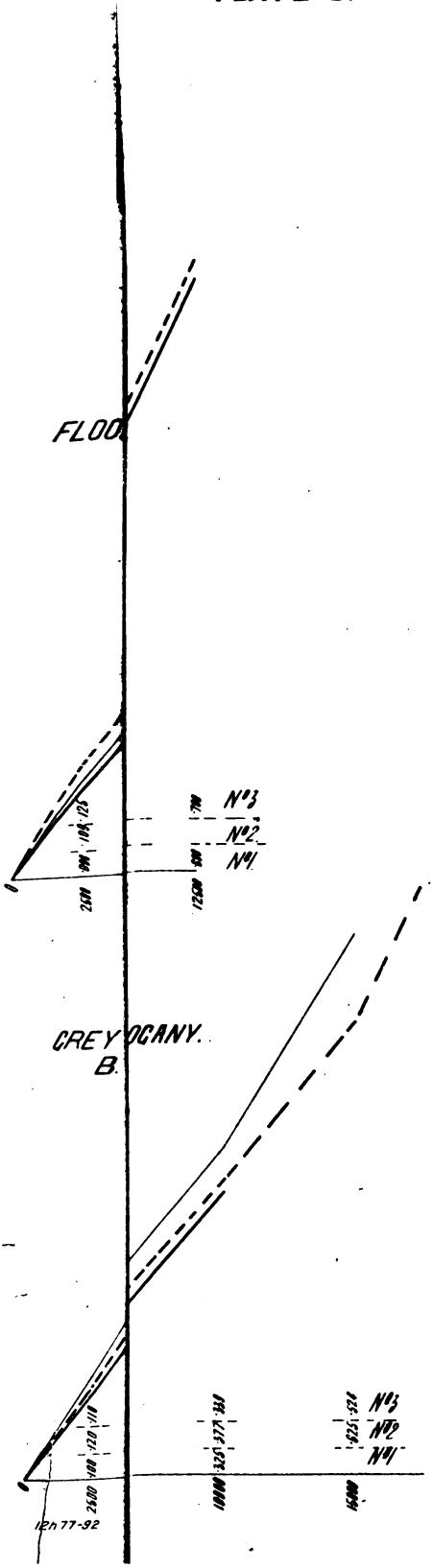

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PLATE 10.

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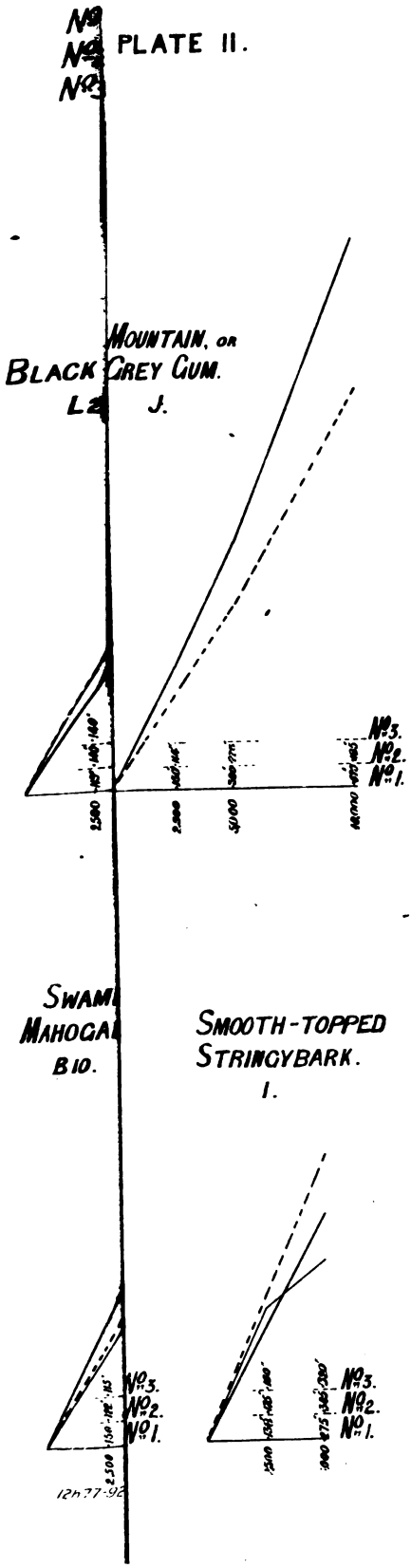
PLATE II.



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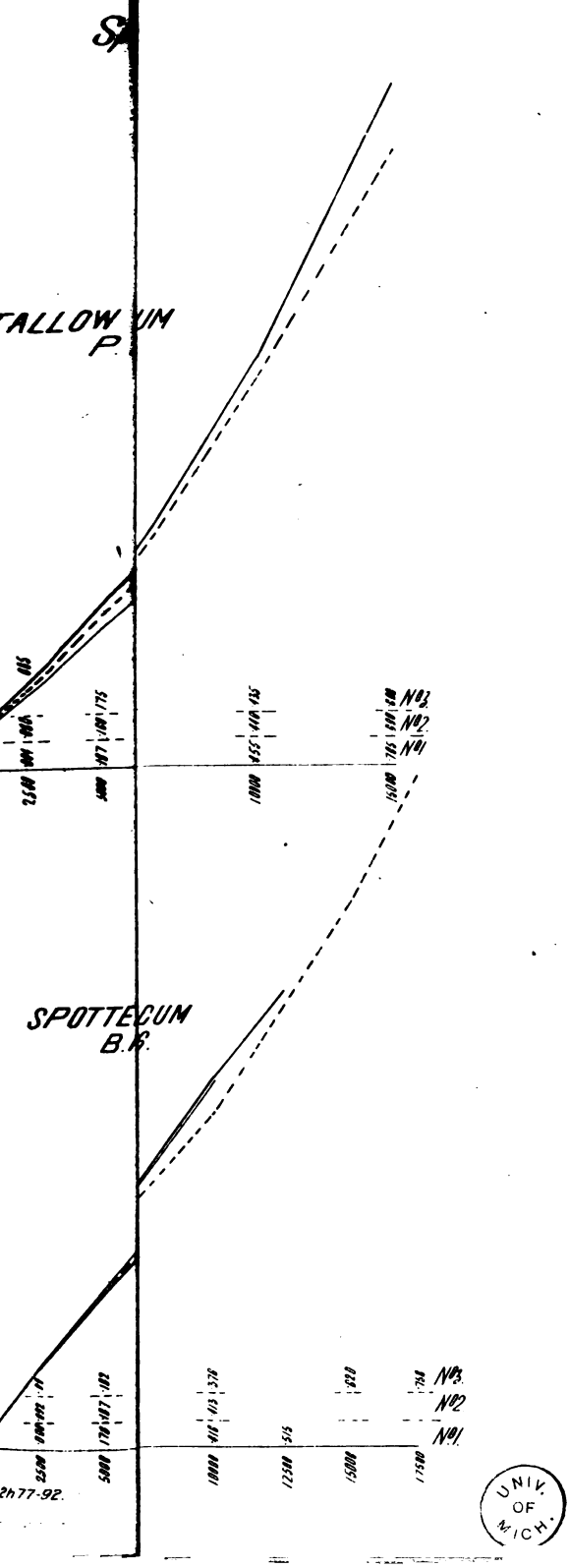

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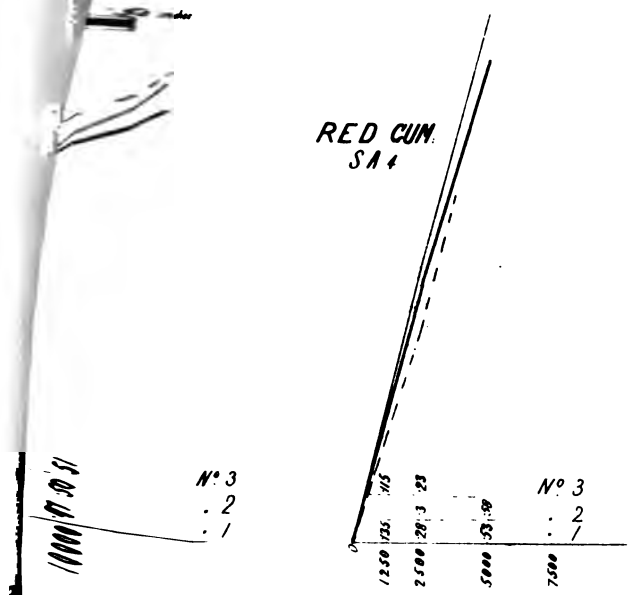

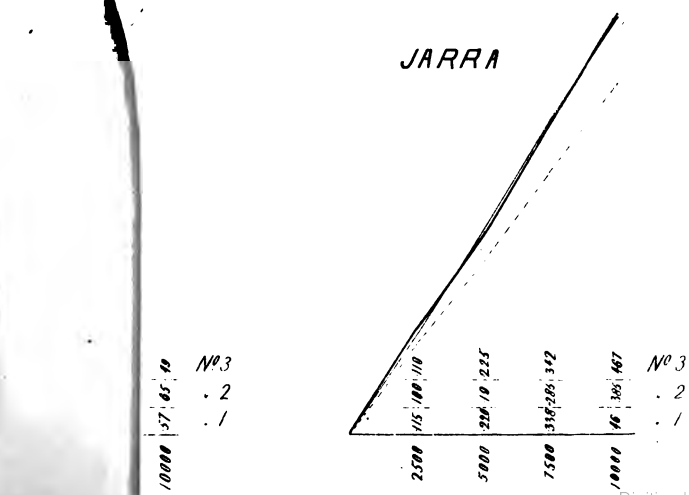

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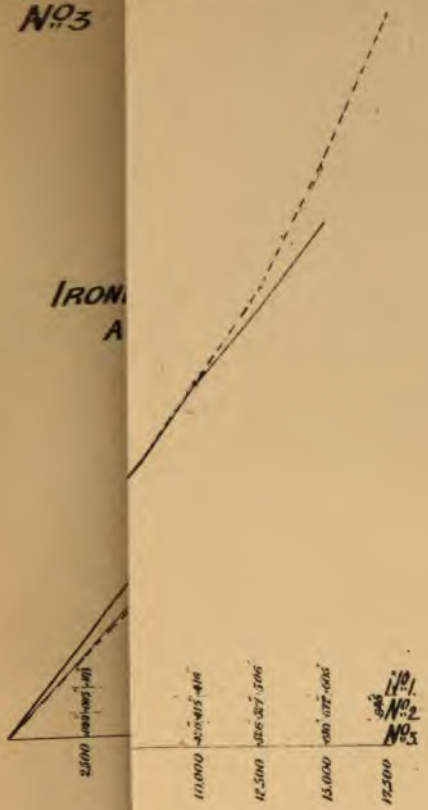
No. 1
No. 2
No. 3

PLATE 14.

IRON

A



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No. 2 -
No. 3 -

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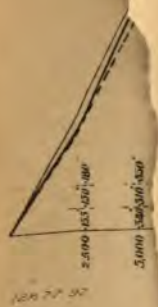
M 1.



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—Plate. II.—

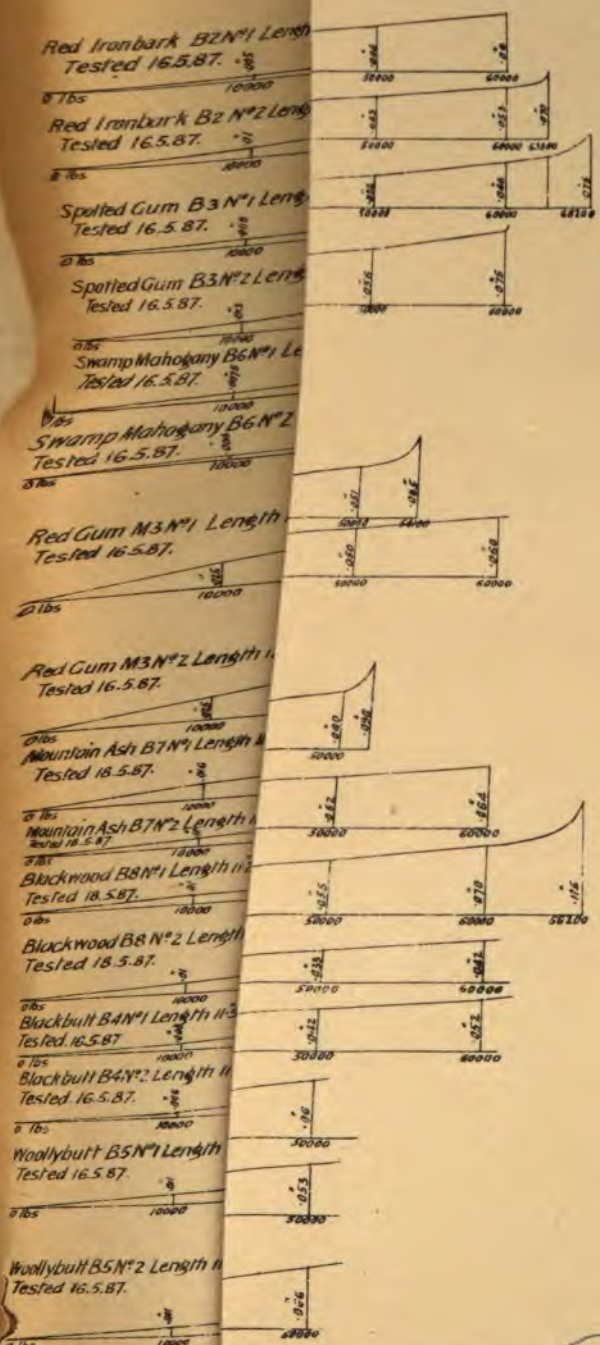

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Plate 21.

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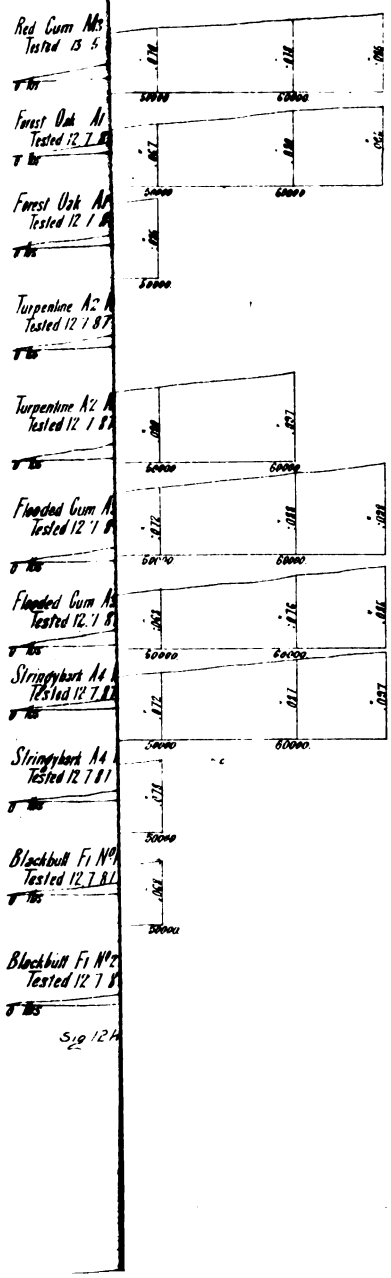
Plate 22.



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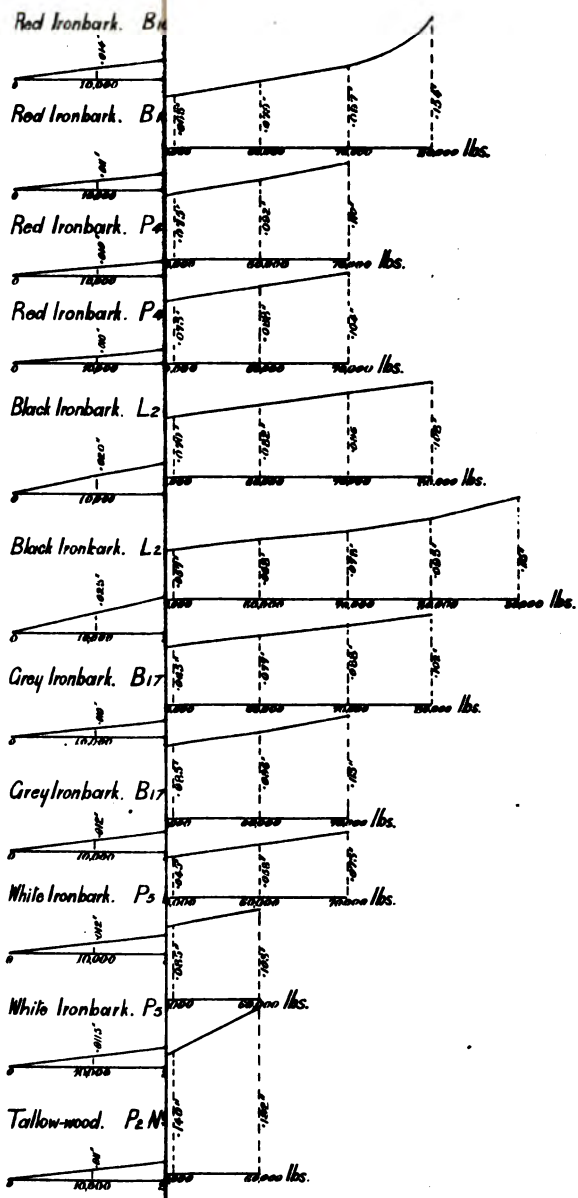

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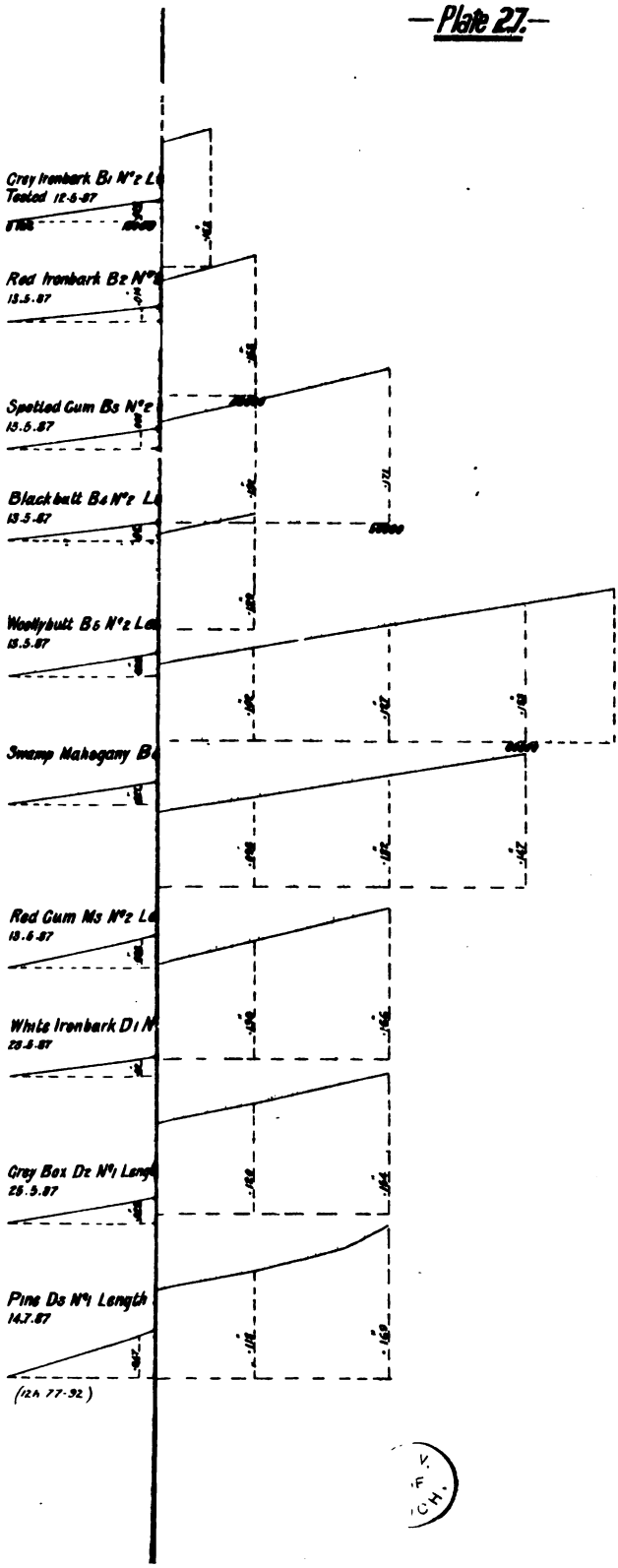

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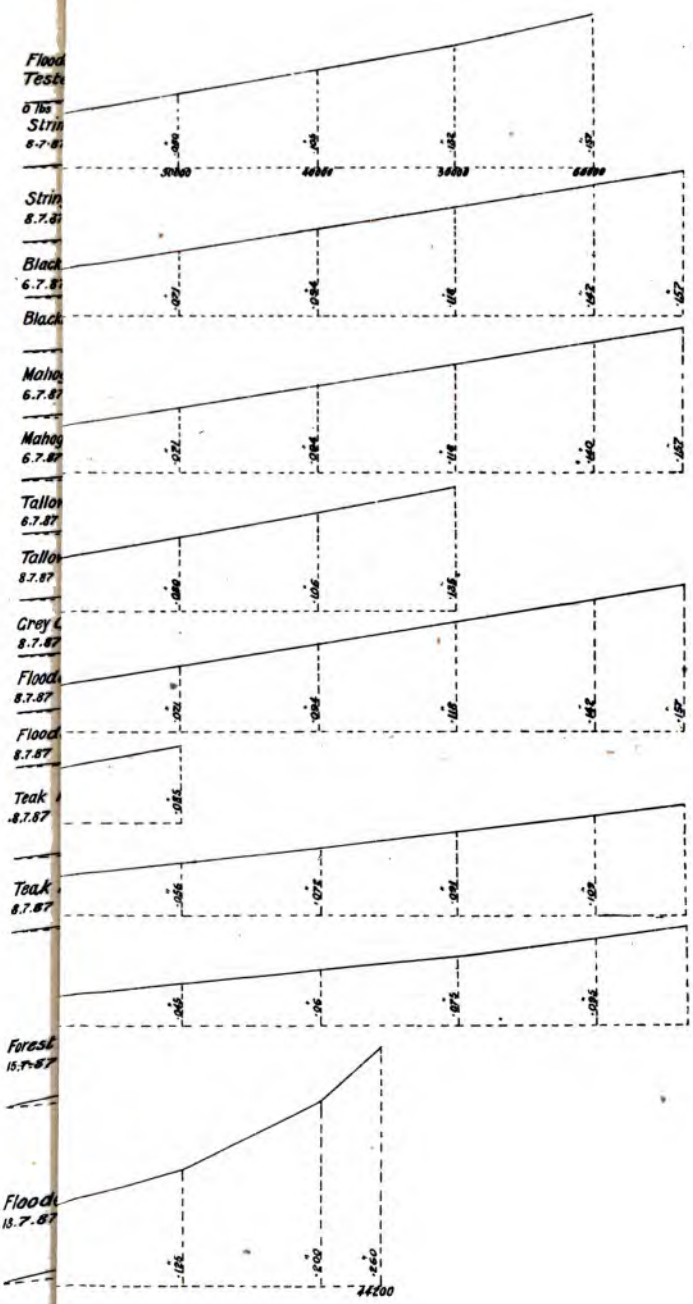

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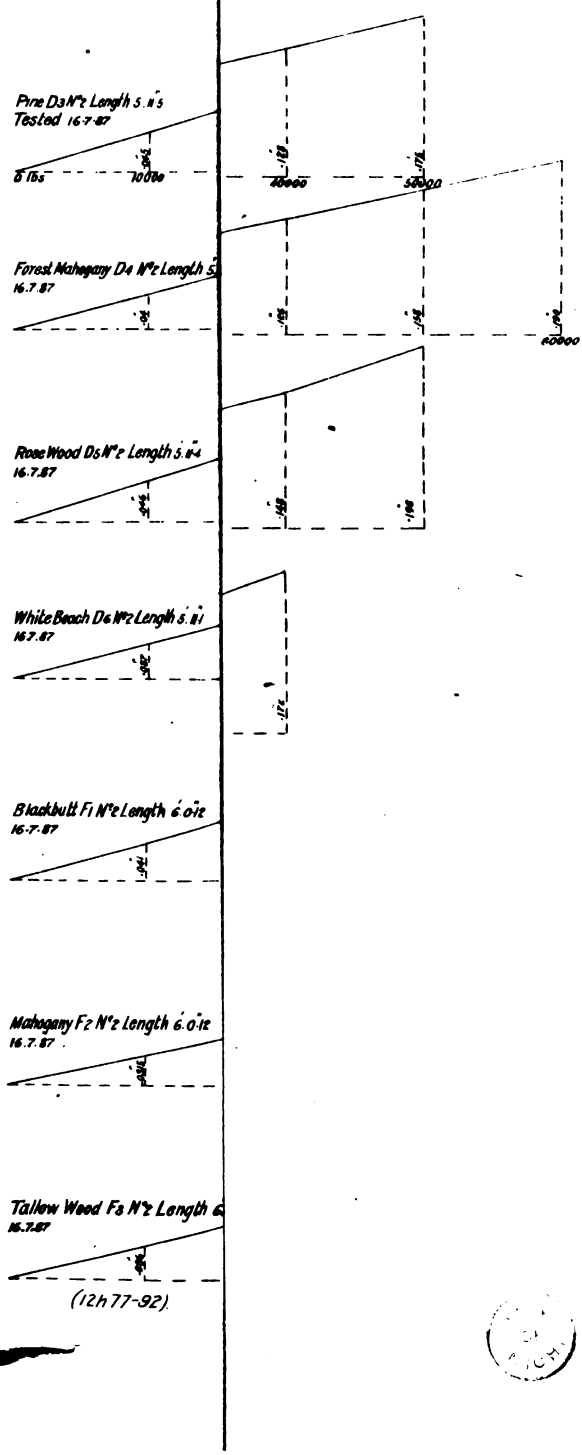
Plate 30.



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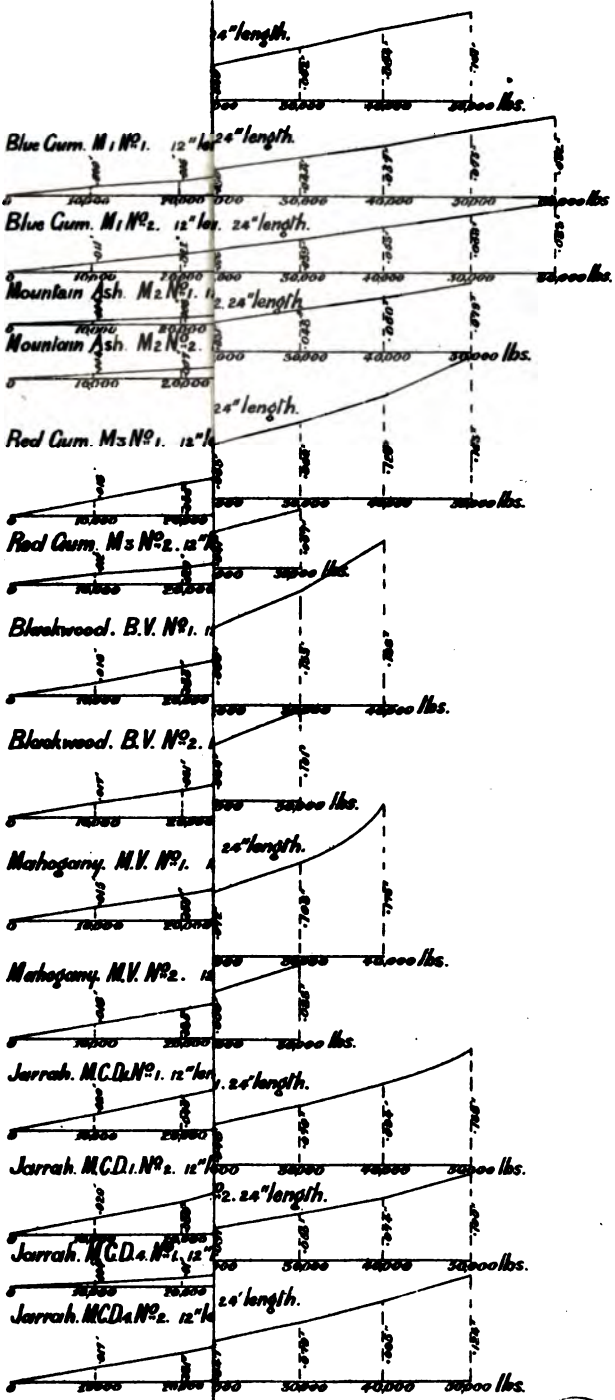

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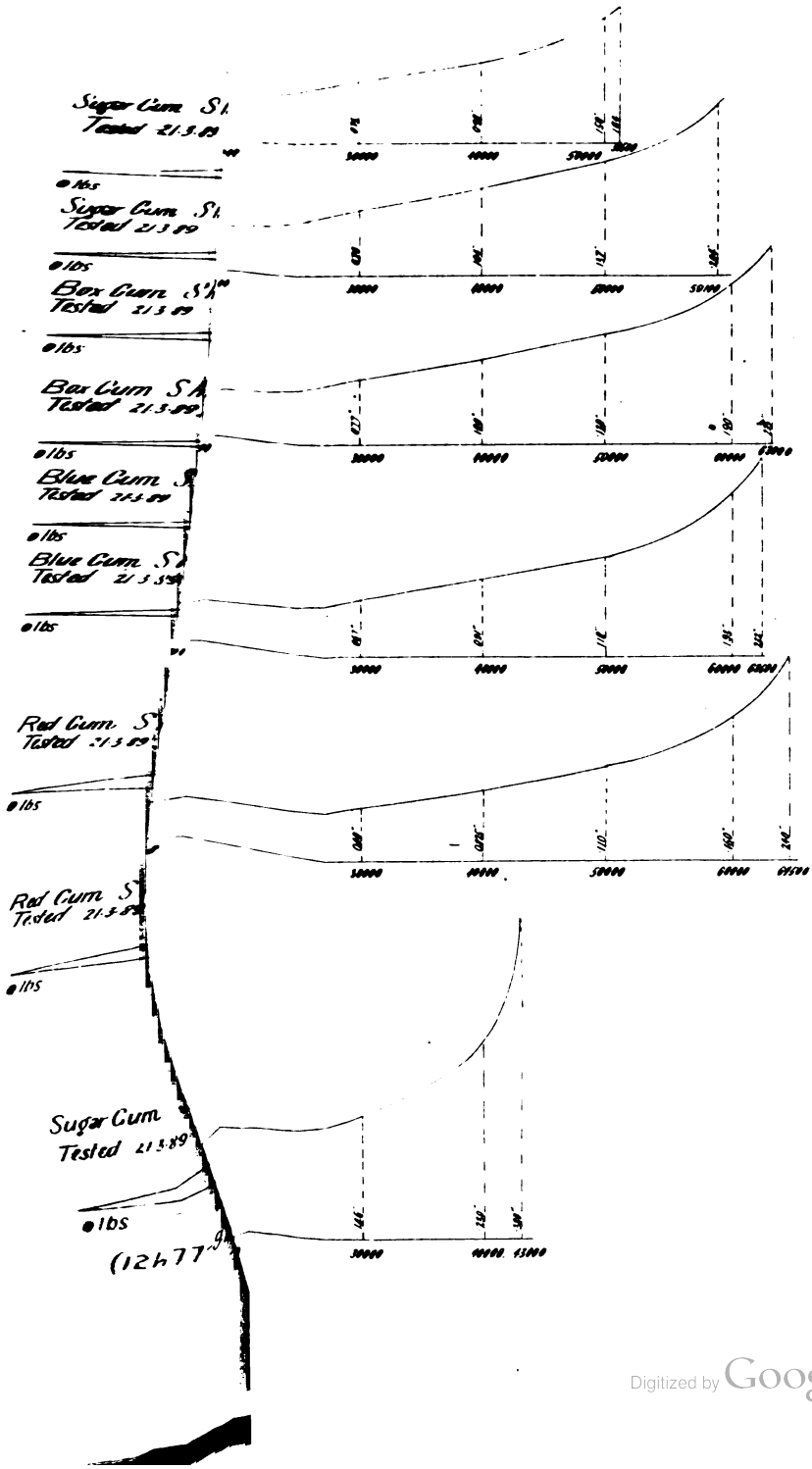

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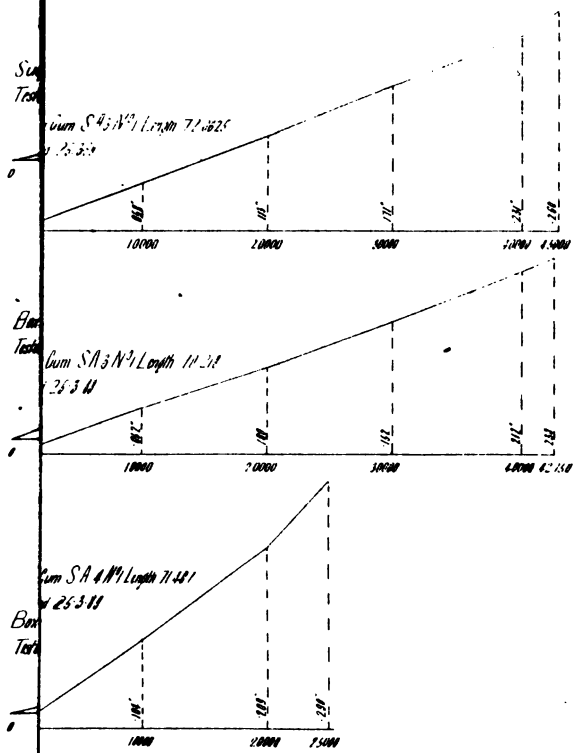
PLATE 33.



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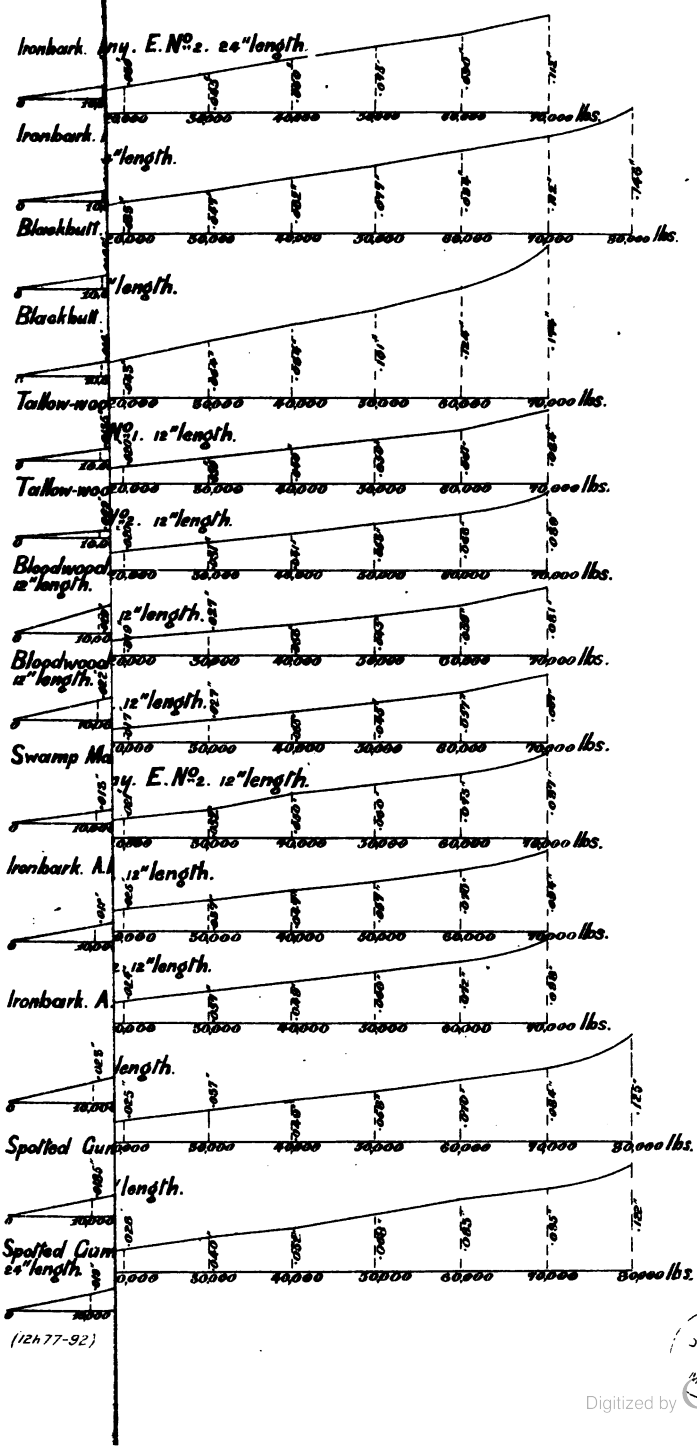

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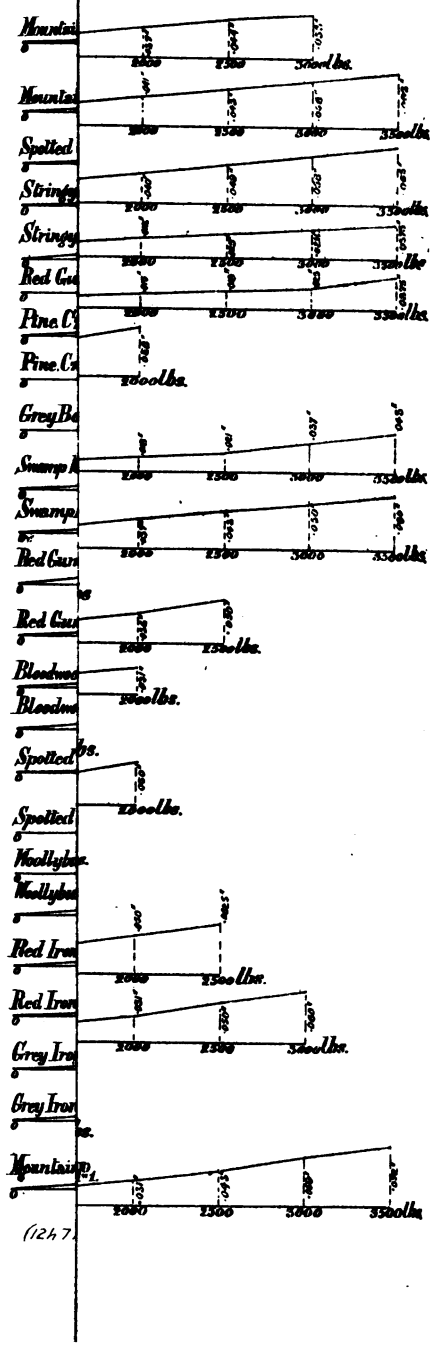
PLATE 35.



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SECTIONS OF TEST PIECES.

TRANSVERSE.

N.S.Wales Timbers.

PLATE 36.

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SECTIONS OF TEST PIECES.

TRANSVERSE.

PLATE 37.

N.S.Wales Timbers.

Victorian Timbers.

South Australian Timbers.

Western Australian Timbers.

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE SYDNEY, NEW SOUTH WALES.

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SECTIONS OF TEST PIECES.

PLATE 38.

COMPRESSION.

12" LENGTHS.

N.S. Wales Timbers.

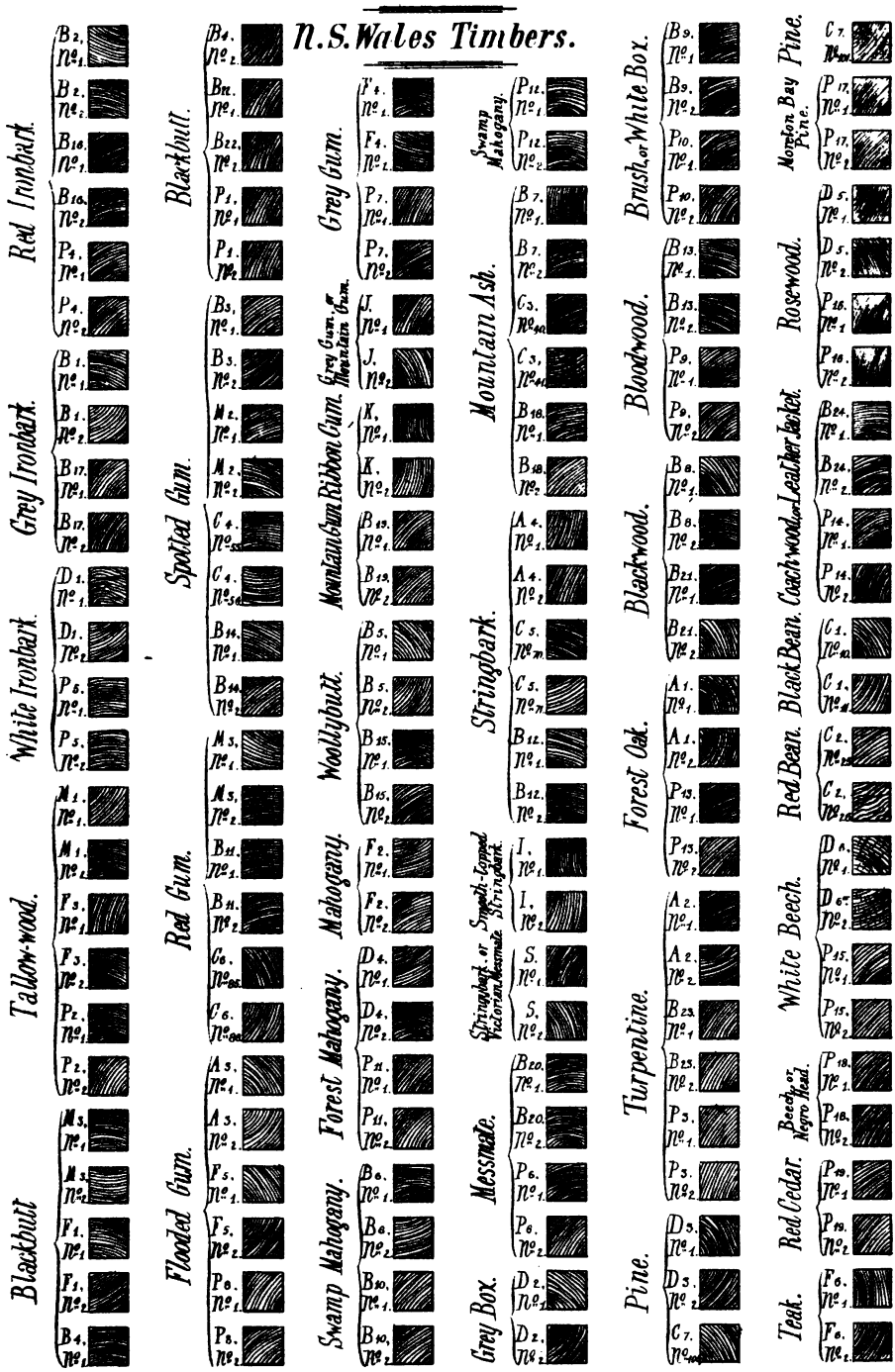

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PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

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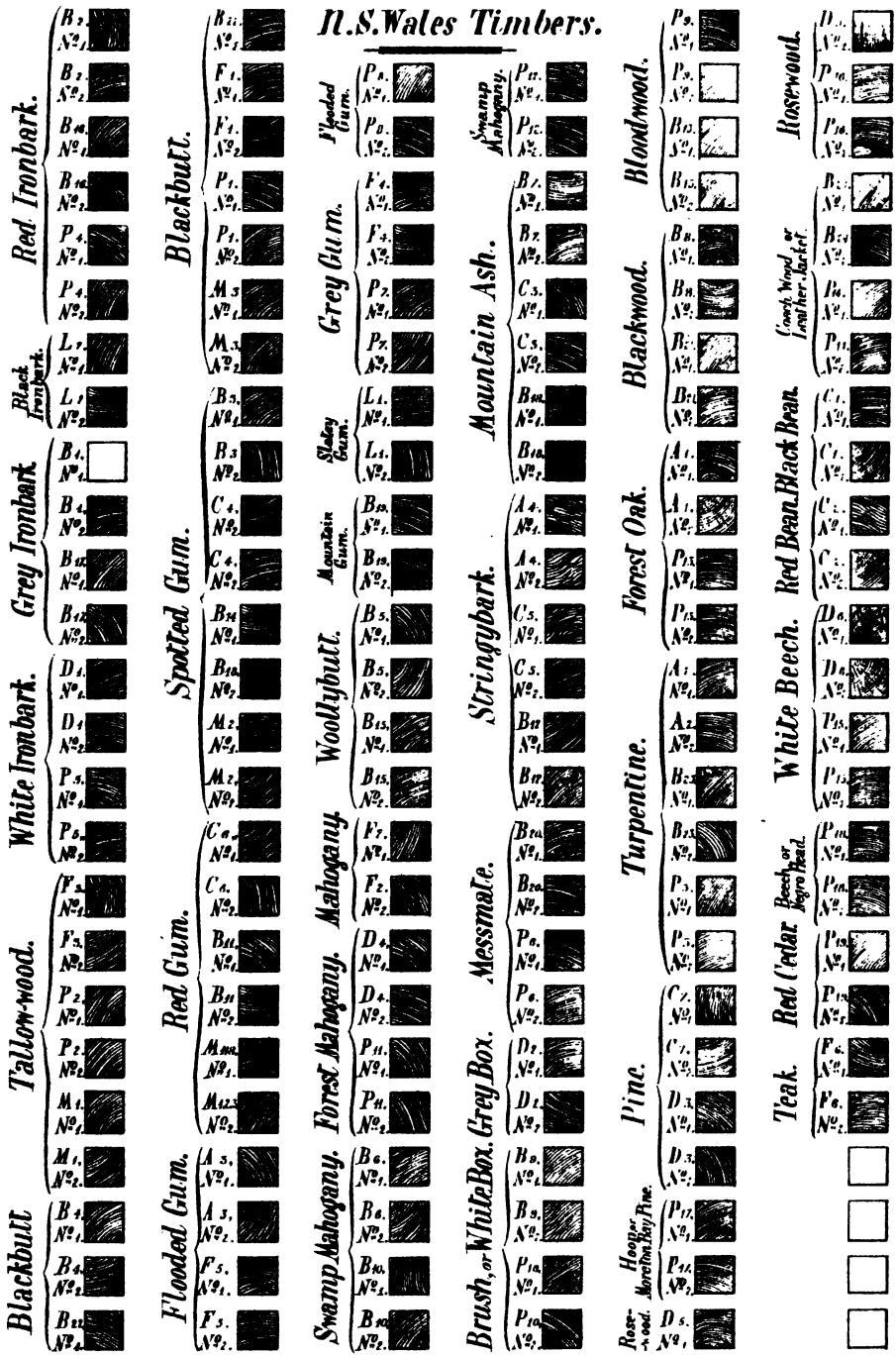
SECTIONS OF TEST PIECES.

COMPRESSION.

24" LENGTHS.

PLATE 39.

N.S.Wales Timbers.



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SECTIONS OF TEST PIECES.

PLATE 40.

COMPRESSION.

48' LENGTHS.

N.S.Wales Timbers.

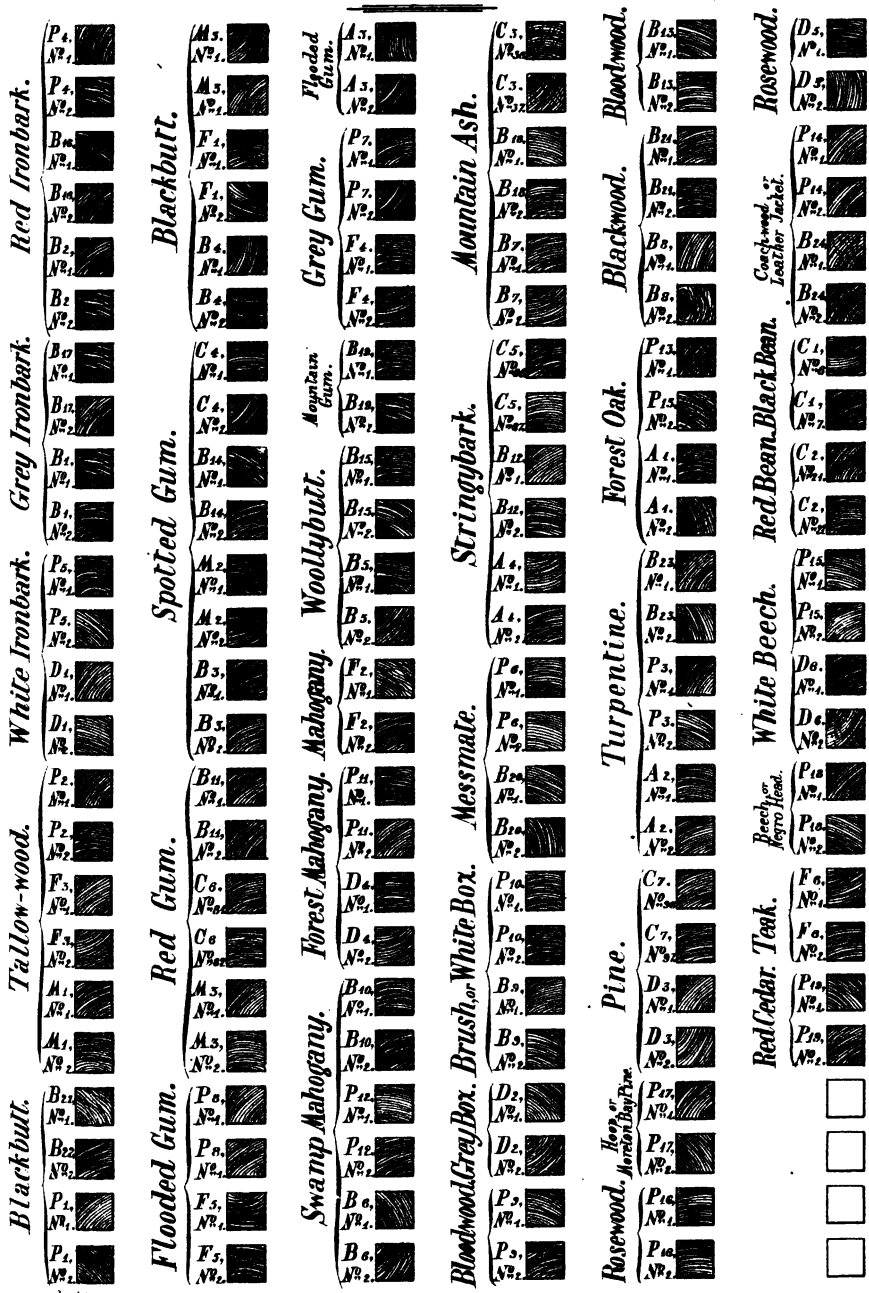

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

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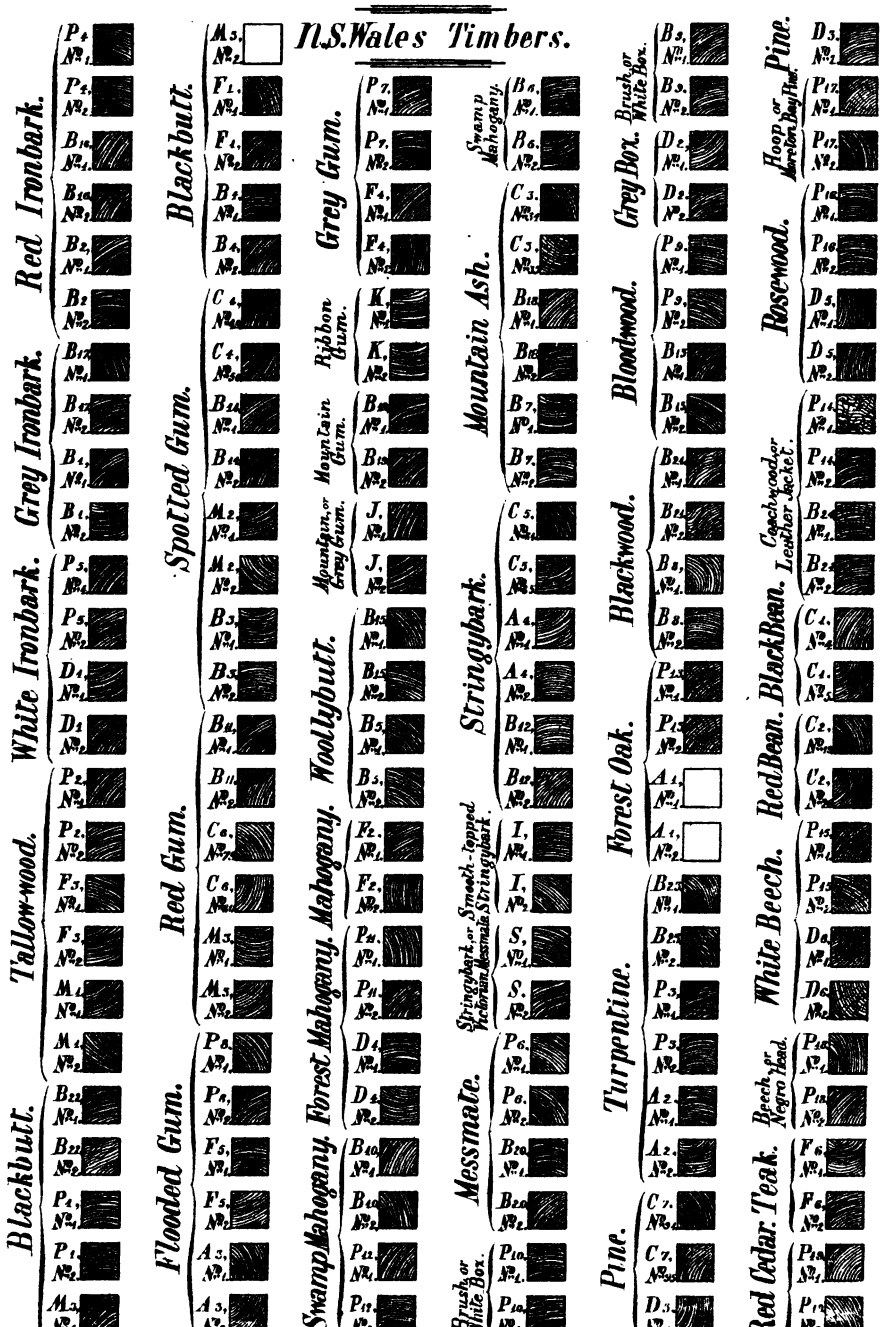
SECTIONS OF TEST PIECES.

PLATE 41

COMPRESSION.

72" LENGTHS.

N.S.Wales Timbers.



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SECTIONS OF TEST PIECES. PLATE 42.

COMPRESSION.

Victorian Timbers.

Local Name		Length. 12"	24"	48"	72"	Local Name		Length. 12"	24"	48"	72"
Blue Gum.	M 1. No. 1	■	■	■	■	Blackwood.	B.V. No. 1.	■	■	■	■
	M 1. No. 2.	■	■	■	■		B.V. No. 2.	■	■	■	■
Mountain Ash.	M 2. No. 1.	■	■	■	■	Mahogany.	M.V. No. 1.	■	■	■	■
	M 2. No. 2.	■	■	■	■		M.V. No. 2.	■	■	■	■
Red Gum.	M 3. No. 1.	■	■	■	■	Blackwood.	B.V. No. 3.		■		
	M 3. No. 2.	■	■	■	■	Mahogany.	M.V. No. 3.		■		

South Australian Timbers.

Sugar Gum.	S.A. 1. No. 1.	■	■	■	■	Blue Gum.	S.A. 3. No. 1.	■	■	■	□
	S.A. 1. No. 2.	■	■	□	□		S.A. 3. No. 2.	■	■	□	□
Box Gum.	S.A. 2. No. 1.	■	■	■	■	Red Gum.	S.A. 4. No. 1.	■	■	■	■
	S.A. 2. No. 2.	■	■	■	□		S.A. 4. No. 2.	■	■	■	□

Western Australian Timbers.

Jarrah.	M.C.D. 1. No. 1.	■	■	■	■	Karri.	M.C.D. 3. No. 1.	■	■	■	■
	M.C.D. 1. No. 2.	■	■	■	■		M.C.D. 3. No. 2.	■	■	■	■
Red Gum.	M.C.D. 2. No. 1.	■	■	■	■	Jarrah.	M.C.D. 4. No. 1.	■	■	■	■
	M.C.D. 2. No. 2.	■	■	■	■		M.C.D. 4. No. 2.	■	■	■	■

New South Wales Timbers.

6" Lengths.

Ribbon Gum.	K. No. 1. ■	Smooth-topped Stringybark.	I. No. 1. ■
	K. No. 2. ■		I. No. 2. ■
Mountain, or Grey Gum.	J. No. 1. ■	Stringybark, or Victorian Messmate.	S. No. 1. ■
	J. No. 2. ■		S. No. 2. ■

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SYDNEY, NEW SOUTH WALES

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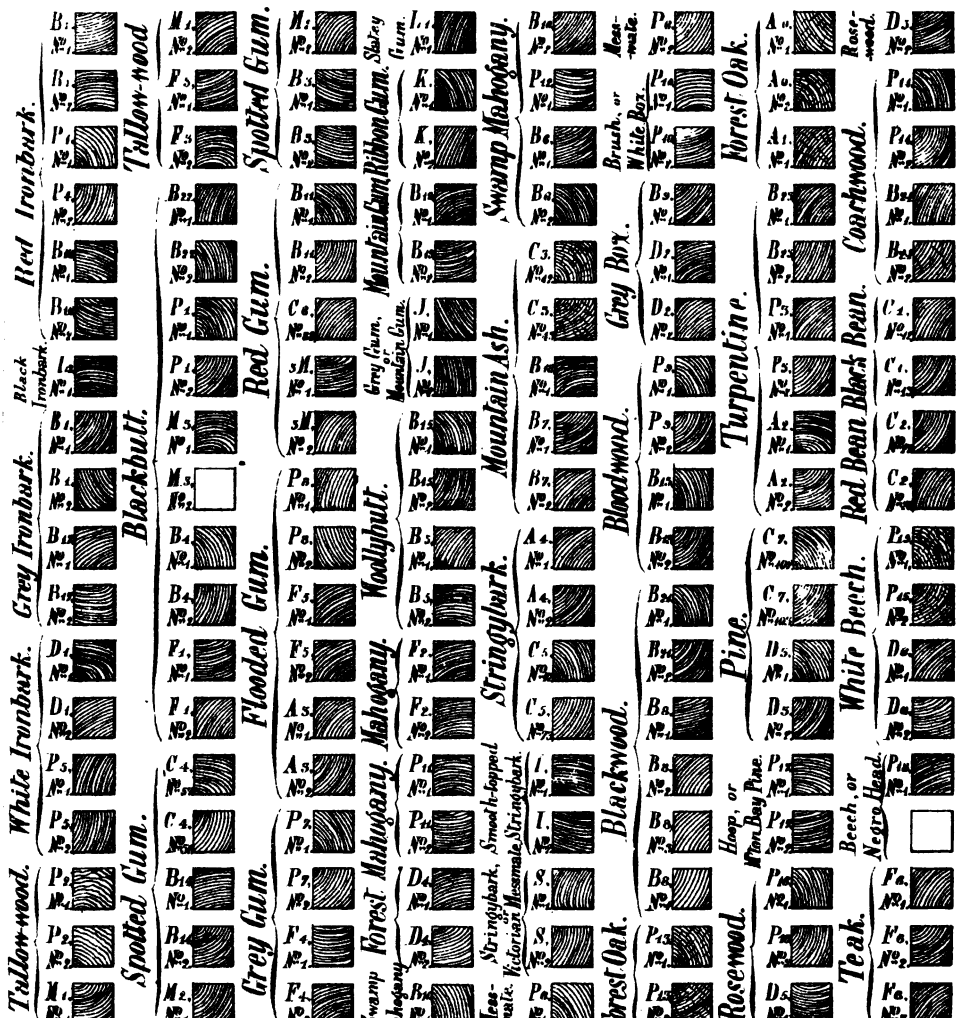
SECTIONS OF TEST PIECES.

TENSION.

PLATE 43.

N.S. Wales Timbers.



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